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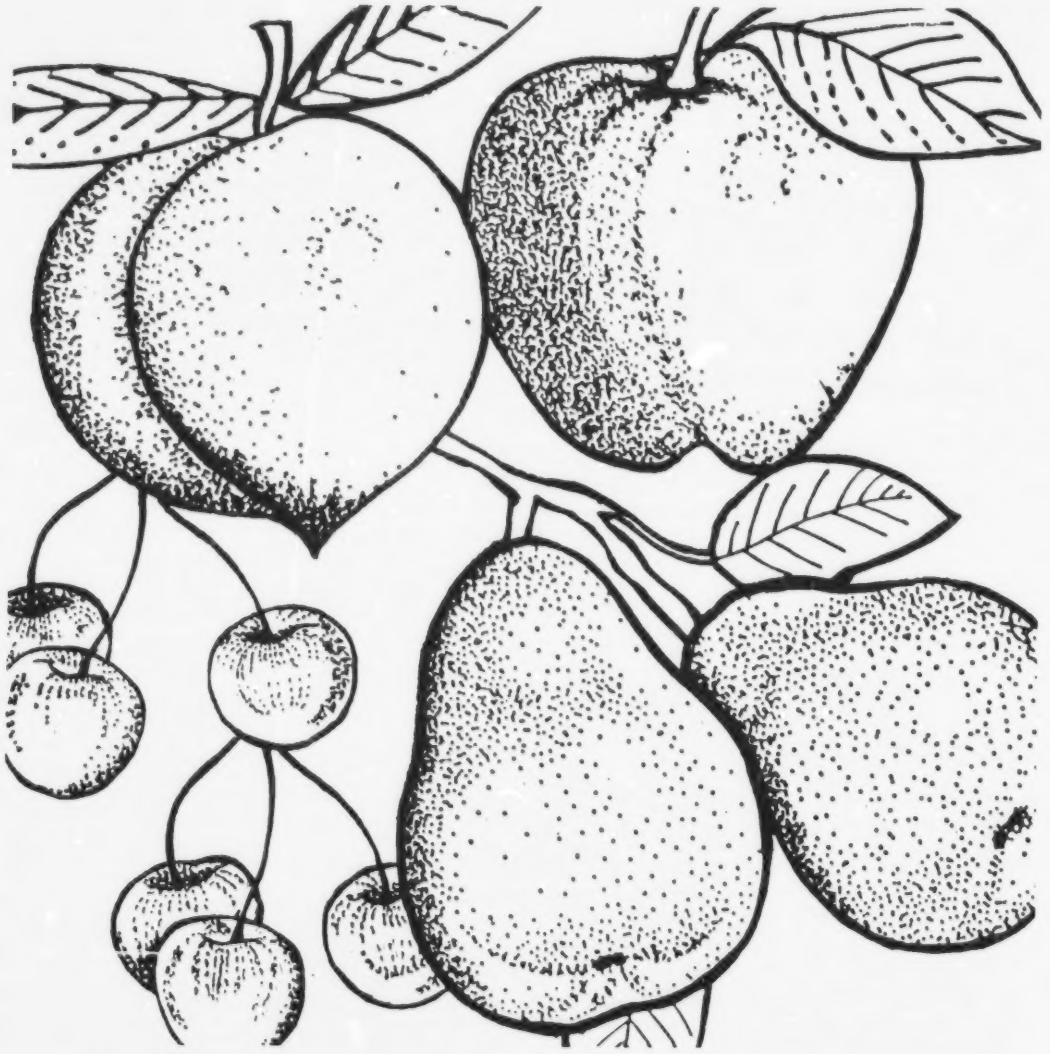
FRUIT CROPS: ESTIMATED PRODUCTION COSTS ONTARIO, 1989



ECONOMICS AND POLICY
COORDINATION BRANCH

ONTARIO MINISTRY OF AGRICULTURE AND FOOD
LEGISLATIVE BUILDINGS, TORONTO, ONTARIO, M7A 1B6

ECONOMICS INFORMATION

REPORT NO. 89-04

FRUIT CROPS

ESTIMATED PRODUCTION COSTS

ONTARIO, 1989

by

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TABLE OF CONTENTS

	Page
INTRODUCTION	1
THE DEVELOPMENT OF THE ACRES PROGRAM	1
METHODS AND PROCEDURES	1
LABOUR HOURS AND COSTS	2
MATERIALS	2
TRACTORS, MACHINES AND TRUCKS	2
CUSTOM FARMWORK SERVICES	3
LAND CHARGES	3
BUILDING COSTS	4
INTEREST ON OPERATING CAPITAL	5
OTHER OVERHEAD	5
OTHER COST CONSIDERATIONS	5
YIELDS AND RETURNS	5
GROSS MARGIN ANALYSIS	5
CASH ANALYSIS	5

INDEX TO TABLES

Table		
1.	Apples on Standard Trees: Estimated Cost of Production, Ontario, 1989	6
2.	Apples on Standard Trees: Operation Costs, Ontario, 1989	7
3.	Apples on Size-Controlling Trees: Estimated Cost of Production, Ontario, 1989	8
4.	Apples on Size-Controlling Trees: Operation Costs, Ontario, 1989	9
5.	Sour Cherries for Processing, Hand-Harvested: Estimated Cost of Production, Ontario, 1989	10
6.	Sour Cherries for Processing, Hand-Harvested: Operation Costs, Ontario, 1989	11
7.	Sour Cherries for Processing, Machine-Harvested: Estimated Cost of Production, Ontario, 1989	12
8.	Sour Cherries for Processing, Machine-Harvested: Operation Costs, Ontario, 1989	13
9.	Sweet Cherries for Fresh Market: Estimated Cost of Production, Ontario, 1989	14
10.	Sweet Cherries for Fresh Market: Operation Costs, Ontario, 1989	15
11.	Sweet Cherries for Canning and Freezing Purposes: Estimated Cost of Production, Ontario, 1989	16
12.	Sweet Cherries for Canning and Freezing Purposes: Operation Costs, Ontario, 1989	17
13.	Sweet Cherries for Maraschino Purposes: Estimated Cost of Production, Ontario, 1989	18
14.	Sweet Cherries for Maraschino Purposes: Operation Costs, Ontario, 1989	19
15.	Concord Grapes for Processing: Estimated Cost of Production, Ontario, 1989	20
16.	Concord Grapes for Processing: Operation Costs, Ontario, 1989	21

INDEX TO TABLES (Cont'd)

Table		Page
17.	DeChaunac Grapes for Processing: Estimated Cost of Production, Ontario, 1989	22
18.	DeChaunac Grapes for Processing: Operation Costs, Ontario, 1989	23
19.	J. Riesling Grapes for Processing: Estimated Cost of Production, Ontario, 1989	24
20.	J. Riesling Grapes for Processing: Operation Costs, Ontario, 1989	25
21.	Seyval Blanc Grapes for Processing: Estimated Cost of Production, Ontario, 1989	26
22.	Seyval Blanc Grapes for Processing: Operation Costs, Ontario, 1989	27
23.	Clingstone Peaches (108 trees/acre) for Processing: Estimated Cost of Production, Ontario, 1989	28
24.	Clingstone Peaches (108 trees/acre) for Processing: Operation Costs, Ontario, 1989	29
25.	Clingstone Peaches (145 trees/acre) for Processing: Estimated Cost of Production, Ontario, 1989	30
26.	Clingstone Peaches (145 trees/acre) for Processing: Operation Costs, Ontario, 1989	31
27.	Freestone Peaches (108 trees/acre) for Fresh Market: Estimated Cost of Production, Ontario, 1989	32
28.	Freestone Peaches (108 trees/acre) for Fresh Market: Operation Costs, Ontario, 1989	33
29.	Freestone Peaches (145 trees/acre) for Fresh Market: Estimated Cost of Production, Ontario, 1989	34
30.	Freestone Peaches (145 trees/acre) for Fresh Market: Operation Costs, Ontario, 1989	35
31.	Bartlett Pears for Fresh Market: Estimated Cost of Production, Ontario, 1989	36
32.	Bartlett Pears for Fresh Market: Operation Costs, Ontario, 1989	37
33.	Bartlett Pears for Processing: Estimated Cost of Production, Ontario, 1989	38
34.	Bartlett Pears for Processing: Operation Costs, Ontario, 1989	39
35.	Strawberry "Preplant Year" Costs for Commercial Harvest and Pick-Your-Own: Estimated Cost of Production, Ontario, 1989	40
36.	Strawberry "Preplant Year" Costs for Commercial Harvest and Pick-Your-Own: Operation Costs, Ontario, 1989	40
37.	Strawberry "Planting Year" Costs for Commercial Harvest and Pick-Your-Own: Estimated Cost of Production, 1989	41
38.	Strawberry "Planting Year" Costs for Commercial Harvest and Pick-Your-Own: Operation Costs, Ontario, 1989	42
39.	Strawberry Renovation Costs for Commercial Harvest and Pick-Your-Own: Estimated Cost of Production, Ontario, 1989	43

INDEX TO TABLES (Cont'd)

Table		Page
40.	Strawberry Renovation Costs for Commercial Harvest and Pick-Your-Own: Operation Costs, Ontario, 1989	43
41.	Strawberry Preharvest and Harvest Costs for Commercial Harvest: Estimated Cost of Production, Ontario, 1989	44
42.	Strawberry Preharvest and Harvest Costs for Commercial Harvest: Operation Costs, Ontario, 1989	45
43.	Strawberry Preharvest and Harvest Costs for Pick-Your-Own: Estimated Cost of Production, Ontario, 1989	46
44.	Strawberry Preharvest and Harvest Costs for Pick-Your-Own: Operation Costs, Ontario, 1989	47
45.	Raspberry "Preplant Year" Costs for Commercial Harvest and Pick-Your-Own: Estimated Cost of Production, Ontario, 1989	48
46.	Raspberry "Preplant Year" Costs for Commercial Harvest and Pick-Your-Own: Operation Costs, Ontario, 1989	48
47.	Raspberry "Planting Year" Costs for Commercial Harvest and Pick-Your-Own: Estimated Cost of Production, Ontario, 1989	49
48.	Raspberry "Planting Year" Costs for Commercial Harvest and Pick-Your-Own: Operation Costs, Ontario, 1989	49
49.	Raspberry "Growth Year" Costs for Commercial Harvest and Pick-Your-Own: Estimated Cost of Production, Ontario, 1989	50
50.	Raspberry "Growth Year" Costs for Commercial Harvest and Pick-Your-Own: Operation Costs, Ontario, 1989	50
51.	Raspberry Preharvest and Harvest Costs for Commercial Harvest: Estimated Cost of Production, Ont., 1989	51
52.	Raspberry Preharvest and Harvest Costs for Commercial Harvest: Operation Costs, Ontario, 1989	52
53.	Raspberry Preharvest and Harvest Costs for Pick-Your-Own: Estimated Cost of Production, Ontario, 1989	53
54.	Raspberry Preharvest and Harvest Costs for Pick-Your-Own: Operation Costs, Ontario, 1989	54

APPENDIX TABLES

1.	Marketed Fruit Production, Ontario, 1984-1988	55
2.	Average Prices Received for Fruit, Ontario, 1984-1988	56
3.	Minimum Prices Paid for Ontario Tender Fruit for Processing, 1985-1989	57
4.	Minimum Prices Paid for Ontario Grapes for Processing, 1984-1988	58

INTRODUCTION

Since 1948, the Economics and Policy Coordination Branch has carried out comprehensive studies of major field and horticultural crops grown in Ontario. These studies were designed to determine costs and returns of various farm enterprises, as well as the physical amounts of production inputs required.

Traditionally, data was collected by means of farmer interviews. Published reports of these studies in the form of county, regional and provincial averages found a wide distribution among extension and research personnel, educational institutions, farm organizations, lending institutions and policy makers. Cooperating farmers received reports showing their individual information in comparison with group averages.

With this extensive background in the development of cost studies, the Economics and Policy Coordination Branch now use micro-computers in the preparation of cost data. Computer simulation now replaces the time consuming process of data collection, tabulation and analysis.

With this new approach, special attention is paid to the physical quantities and prices of inputs for each crop studied. The technology used in the production of various crops is carefully examined so that the computer models will accurately reflect the appropriate production technology for each commodity.

Information on inputs is obtained from a number of sources, including:

1. previous studies done by this Branch;
2. surveys of the farm supply trade;
3. technical input/output coefficients; and
4. the consensus of producers, researchers, extension and agribusiness personnel.

THE DEVELOPMENT OF THE ACRES PROGRAM

A large number of computer programs that generate budgets and crop production costs are now in existence. These computer programs vary in their degree of sophistication and in the amount of detail prepared. A large number of estimates covering a wide range of conditions can be generated quickly and efficiently. The effect of varying levels of technology, management practices and price levels can also be analyzed.

Cost of production estimates used in this report are based on the ACRES program. ACRES (Agricultural Crop Enterprises System) is a FORTRAN program originally written in Montana, adapted by Alberta Agriculture, modified and rewritten by the Economics and Policy Coordination Branch to accommodate Ontario agricultural conditions. The 1989 cost of production estimates presented in this report are based on this computer model.

METHODS AND PROCEDURES

The information used in the preparation of each production cost estimate was prepared through the use of recent Economics and Policy Coordination Branch studies, plus consultation with producers, extension, research and agribusiness personnel.

For each crop cost estimate in this report, the data was organized into variable and fixed costs and totalled to arrive at the cost of production both on a per acre and per hectare basis. Variable costs are those which vary directly with the production of each crop grown. They include seed, plants, hired labour, fertilizer, herbicides, insecticides, fungicides, other materials, machinery operating costs, marketing charges and interest on operating capital. Fixed cost inputs are operator labour, management allowance, interest on land, machinery and buildings, depreciation on machinery and buildings, and other overhead cost items.

In this report, cash costs of production are also determined. Cash costs include total variable costs, interest on the debt portion of investment in tractors and machines, and other overhead costs.

LABOUR HOURS AND COSTS

The required number of labour hours was based on previous studies, as well as through discussions with those familiar with the production of each study crop. There are some crops which are harvested on a fixed rate per unit. For these crops, the labour hours and costs vary with the yields used in the cost estimate.

The operator labour hours were valued at $8.00 per hour. In addition, an allowance to management was made at the rate of 5 percent of the gross income.

The hired labour cost was calculated on a per hour basis and included benefits such as worker compensation, unemployment insurance, and the Canada Pension Plan. The rates varied according to area, crop and skill involved.

For some crops, piece work rates were used which were suggested by local farm labour pools. An allowance of 15 percent of basic earnings was added to cover benefits.

MATERIALS

The amount of each material input was based on commonly used practices. Input prices are based on averages charged by the trade in the area where the particular crop is grown. For most crops, the quantities of seed, plants, fertilizer nutrients and other inputs are given on a per hectare basis. Because of the multitude of products available, pesticides are grouped as herbicides, insecticides, fungicides, nematicides, etcetera. The cost and quantity of non-returnable containers is reported where applicable.

TRACTORS, MACHINES AND TRUCKS

Machinery complements used in the various crop production cost estimates were assumed to be five years old. Tractor and machine costs included depreciation, interest on investment, insurance, storage, repairs, fuel and lubrication. If machines were used for other farming operations, costs were adjusted based on the proportion of use on the study crop. The declining balance method of depreciation was used, and a 15 percent rate to powered and a 10 percent rate to non-powered machines was applied.

Interest on machinery investment was calculated on the assumption that the equity portion was 70 percent and the debt portion was 30 percent of the total depreciated value. For this report, interest on equity was calculated at 7.7 percent, which was the average interest rate paid by chartered banks on savings accounts. The interest on the debt portion was based on the average prime rate of 13.0 percent, plus one for a total of 14.0 percent. Insurance and storage costs for machinery were based on 1.5 percent of their purchase price.

Repair and maintenance costs for individual machines were originally based on the fact sheet, "Cost of Owning and Operating Farm Machines", Agdex 825, Ontario Ministry of Agriculture and Food, with subsequent updating based on price indices provided by Statistics Canada.

Fuel costs were based on the size of each tractor, truck or self-propelled machine used in the production operation. The following farmgate fuel prices were used: gasoline - 26.0 cents/litre; diesel - 23.0 cents/litre. The cost of oil, grease and filters was calculated at 15 percent of the fuel cost. Fuel costs are net of all 1989 Provincial and Federal rebates. The Federal Sales Tax rebate is scheduled to be reduced on January 1, 1990 for both gasoline and diesel. Also, the Federal Excise Tax rebate on gasoline is being eliminated effective January 1, 1990.

CUSTOM FARMWORK SERVICES

There are crops produced in Ontario where it is an accepted practice to use custom farmwork services to perform certain operations. Usually, these services are employed when the farmer needs specialized machines, such as harvesters, sprayers, fertilizer applicators and trucks. Most of these machines cannot be economically owned and operated by one producer. Custom costs were itemized on a per hectare or per acre basis, and obtained from report number 89-01 "A Survey of Custom Farmwork Rates Charged in Ontario, 1988".

LAND CHARGES

Determining the annual cost for land use is a controversial part in any study on production costs. During the past two decades, purchasers of farm land have been willing to pay more for it than can be justified from agricultural production. Purchasers believe the speculative aspect of land ownership in inflationary times offers benefits above those received from crop production. In deflationary times, however, this situation is reversed. For this reason the appropriate interest rate used in calculating the interest cost on bare land for these crop production estimates is the real interest rate. The "real interest rate" is defined as the current lending rate of interest adjusted for inflation.

In this report, interest on land investment was calculated as follows:

1. The value of bare land was based on the average value for land in areas of Ontario where the production of each study crop predominates.

2. The interest rate applied was the average prime rate for 1988 of 10.8 percent discounted for the rate of inflation of 4.0 percent, which resulted in a 6.8 percent rate. It was assumed that land for all study crops would be purchased in the previous year prior to cropping.

No farm real estate taxes were charged to any study crop because of the 1989 Ontario Farm Tax Reduction Program.

BUILDING COSTS

For those crops where buildings are used in grading, packing, and/or storage, a building cost allowance was made.

The initial cost of these structures was based on the assumption that buildings were five years old.

Depreciation	%
Steel and concrete structures	2.5
Wood structures	5.0
Greenhouses	2.0

The interest on building investment was set at 5.1 percent, which was also used in calculating interest on land investment.

Repairs and Maintenance	%
Steel structures	1.0
Concrete structures	0.25
Wood structures	1.5

Insurance

0.5 percent of initial costs.

The cost of machine housing was covered under tractor and machine costs.

Allowances are made for the use of picking baskets, storage bins, and other pieces of reusable equipment required in the production of certain crops.

INTEREST ON OPERATING CAPITAL

Interest on operating capital required to finance each crop was calculated from the time an expenditure was made until the time income was generated from sales. Operating capital includes the cost of materials, fuel, repairs, hired labour and other cash items. In this study, the interest rate applied to operating capital was the average estimated prime rate for 1989 of 13.0 percent plus 1 percent for a rate of 14.0 percent.

OTHER OVERHEAD

This allowance covers such items as the study crop's share of utilities, accounting and administration costs, use of the farm automobile, and general farm maintenance.

OTHER COST CONSIDERATIONS

Depending on the crop studied, there are certain additional costs such as crop insurance, marketing board fees, grading charges and selling commissions. Costs for these were obtained from the respective Marketing Boards, Crop Insurance Commission and Ontario Grain Dealers Association.

YIELDS AND RETURNS

For each study crop presented in this report, a footnote to the table defines how the average yield and price were calculated. For many crops the yield will vary considerably within the Province.

Additional information on average yields and prices is shown in the Appendix of this report.

GROSS MARGIN ANALYSIS

Gross margin is the amount above the variable costs that a crop contributes to the operator for his wages, management, the investment in machinery and land, and to other overhead costs. A different expected yield and/or price could considerably change the gross margin calculated.

CASH ANALYSIS

The cash analysis section estimates the returns over cash costs. Cash costs include all variable costs, as well as interest on the debt portion of tractor and machine investment, and other overhead costs.

Table 1.--Apples on Standard Trees: Estimated Cost of Production, Ontario, 1989

	Cost per hectare	Cost per acre
	- dollars -	
VARIABLE COSTS		
Hired labour:		
Harvesting, 198 hours/ha	1,186	480
Other, 47.0 hours/ha	282	114
Fertilizer:		
Ammonium nitrate, 111 kg/ha	27	11
Muriate of potash, 222 kg/ha	47	19
Insecticides	264	107
Fungicides	254	103
Herbicides	32	13
Bee rental	49	20
Mouse bait	7	3
Tractor and machine costs:		
Repairs and maintenance	161	65
Fuel	74	30
O.A.M.C. fees	96	39
Bin rental	346	140
Custom bin hauling	395	160
Interest on operating capital	114	46
TOTAL VARIABLE COSTS	**3,334**	**1,350**
FIXED COSTS		
Operator labour:		
Harvesting, 19.8 hours/ha	158	64
Other, 25.9 hours/ha	208	84
Management allowance, 5% of gross income	279	113
Tractor and machine costs:		
Depreciation	232	94
Interest on investment	166	67
Insurance and storage	49	20
Interest on land, $4,450/ha @ 6.8% per annum	301	122
Other overhead	74	30
TOTAL FIXED COSTS	**1,467**	**594**
TOTAL ALL COSTS	**4,801**	**1,944**
COST PER UNIT	**255/tonne**	**4.86/bu.**
(Based on yields of 18.8 tonnes/ha and 400 bu./ac.)		
GROSS MARGIN ANALYSIS		
(Based on average prices of $297.62/tonne and $5.67/bu.)[a]		
Gross income	5,604	2,268
Total variable costs	3,334	1,350
Gross margin	2,270	918
CASH ANALYSIS		
Gross income	5,604	2,268
Cash costs[b]	3,480	1,409
Returns over cash costs	2,124	859

[a] The 1989 price is an average of the previous three years for Ontario-grown apples.

[b] Cash costs include total variable costs plus interest on the debt portion of investment in tractors and machines of $72/ha ($29/ac.) and other overhead costs.

Table 2.--Apples on Standard Trees: Operation Costs, Ontario, 1989

Operation	Times over	Labour		Labour, tractor and machine costs	
		per ha.	per ac.	per ha.	per ac.
		- hours -		- dollars -	
Pruning	[a]	39.5	16.0	311.94	126.24
Brush removal	[a]	3.71	1.5	59.06	23.90
Fertilizing	2	2.47	1.0	48.21	19.51
Mowing	4	4.94	2.0	145.25	58.78
Weed spraying	1	1.24	0.5	26.49	10.72
Spray pesticides	12	9.88	4.0	346.43	140.20
Summer management	[a]	9.88	4.0	79.07	32.00
Apply mouse bait	1	1.24	0.5	17.62	7.13
Harvesting	[a]	198	80.0	1,225.42	495.92
Bin handling and supervision	[a]	19.8	8.0	256.29	103.72

[a] Operation performed as required.

Table 3.--Apples on Size-Controlling Trees: Estimated Cost of Production, Ontario, 1989

	Cost per hectare	Cost per acre
	- dollars -	
VARIABLE COSTS		
Hired labour:		
Harvesting, 203 hours/ha	1,216	492
Other, 87.7 hours/ha	526	213
Fertilizer:		
Ammonium nitrate, 222 kg/ha	52	21
Muriate of potash, 334 kg/ha	72	29
Insecticides	304	123
Fungicides	291	118
Herbicides	44	18
Bee rental	49	20
Mouse bait	12	5
Replacement trees	35	14
Tractor and machine costs:		
Repairs and maintenance	131	53
Fuel	62	25
O.A.M.C. fees	96	39
Bin rental	432	175
Custom bin hauling	494	200
Interest on operating capital	133	54
TOTAL VARIABLE COSTS	**3,949**	**1,599**
FIXED COSTS		
Operator labour:		
Harvesting, 19.8 hours/ha	158	64
Other, 35.8 hours/ha	287	116
Management allowance, 5% of gross income	351	142
Tractor and machine costs:		
Depreciation	205	83
Interest on investment	141	57
Insurance and storage	42	17
Interest on land, $4,450/ha @ 6.8% per annum	301	122
Other overhead	74	30
TOTAL FIXED COSTS	**1,559**	**631**
TOTAL ALL COSTS	**5,508**	**2,230**
COST PER UNIT	**234/tonne**	**4.46/bu.**
(Based on yields of 23.5 tonnes/ha and 500 bu./ac.)		
GROSS MARGIN ANALYSIS		
(Based on average prices of $297.62/tonne and $5.67/bu.)[a]		
Gross income	7,005	2,835
Total variable costs	3,949	1,599
Gross margin	3,056	1,236
CASH ANALYSIS		
Gross income	7,005	2,835
Cash costs[b]	4,085	1,654
Returns over cash costs	2,920	1,181

[a] The 1989 price is an average of the previous three years for Ontario-grown apples.

[b] Cash costs include total variable costs, interest on the debt portion of investment in tractors and machines of $62/ha ($25/ac.), and other overhead costs.

Table 4.--Apples on Size-Controlling Trees: Operation Costs, Ontario, 1989

Operation	Times over	Labour		Labour, tractor and machine costs	
		per ha.	per ac.	per ha.	per ac.
		- hours -		- dollars -	
Replanting trees	[a]	2.47	1.0	41.32	16.72
Pruning	[a]	74.1	30.0	469.49	190.00
Brush removal	[a]	4.94	2.0	78.73	31.86
Fertilizing	2	2.47	1.0	48.21	19.51
Mowing	4	4.94	2.0	145.25	58.78
Weed spraying	1	1.24	0.5	26.49	10.72
Spray pesticides	11	7.41	3.0	259.83	105.15
Summer management	[a]	24.7	10.0	172.97	70.00
Apply mouse bait	1	1.24	0.5	17.62	7.13
Harvesting	[a]	203	82.0	1,255.07	507.92
Bin handling and supervision	[a]	19.8	8.0	256.29	103.72

[a] Operation performed as required.

Table 5.--Sour Cherries for Processing, Hand-Harvested: Estimated Cost of Production, Ontario, 1989

	Cost	
	per hectare	per acre
	- dollars -	
VARIABLE COSTS		
Hired labour:		
Harvesting, 465 hours/ha	2,254	912
Grading, 59.3 hours/ha	356	144
Other, 49.4 hours/ha	292	118
Fertilizer:		
Ammonium nitrate 222 kg/ha	52	21
Muriate of potash 334 kg/ha	72	29
Insecticides	161	65
Fungicides	279	113
Herbicides	44	18
Other sprays	195	79
Manure, 22.4 tonne/ha	247	100
Cover crop seed	12	5
Tractor and machine costs:		
Repairs and maintenance	242	98
Fuel	195	79
Building, repairs and electricity	44	18
Marketing board fees	188	76
Interest on operating capital	215	87
TOTAL VARIABLE COSTS	**4,843**	**1,962**
FIXED COSTS		
Operator labour, 69.2 hours/ha	554	224
Management allowance, 5% of gross income	311	126
Tractor and machine costs:		
Depreciation	447	181
Interest on investment	299	121
Insurance and storage	119	48
Building use	237	96
Interest on land, $22,240/ha @ 6.8% per annum	1,512	612
Other overhead	99	40
TOTAL FIXED COSTS	**3,578**	**1,448**
TOTAL ALL COSTS	**8,426**	**3,410**
COST PER UNIT	**939/tonne**	**852/ton**
(Based on assumed yields of 8.97 tonnes/ha and 4 tons/acre)		
GROSS MARGIN ANALYSIS		
(Based on average prices of $691.69/tonne and $627.50/ton)[a]		
Gross income	6,202	2,510
Total variable costs	4,848	1,962
Gross margin	1,354	548
CASH ANALYSIS		
Gross income	6,202	2,510
Cash costs[b]	5,078	2,055
Returns over cash costs	1,124	455

[a] The price is the 1989 payment for a quality rating of either 95 or 96 percent.

[b] Cash costs include total variable costs plus interest on the debt portion of investment in tractors and machines of $131/ha ($53/ac.) and other overhead costs.

Table 6.--Sour Cherries for Processing, Hand-Harvested: Operation Costs, Ontario, 1989

Operation	Times over	Labour		Labour, tractor and machine costs	
		per ha.	per ac.	per ha.	per ac.
		- hours -		- dollars -	
Pruning and brush removal	1	74.1	30.0	756.10	305.99
Fertilizing	1	2.47	1.0	36.47	14.76
Cultivation	6	7.41	3.0	125.50	50.79
Mowing	2	2.47	1.0	72.62	29.39
Weed spraying	1	2.47	1.0	52.95	21.43
Spray pesticides	7	6.18	2.5	216.51	87.62
Spreading manure	1	3.71	1.5	107.31	43.43
Sow cover crop	1	2.47	1.0	31.53	12.76
General maintenance	[a]	2.47	1.0	40.18	16.26
Distribute and collect containers	[a]	19.8	8.0	296.98	120.19
Picking	[a]	445	180.0	2,170.25	878.29
Sorting & grading	[a]	59.3	24.0	397.78	160.98
Marketing/delivery	[a]	14.8	6.0	451.16	182.58

[a] Operation performed as required.

Table 7.--Sour Cherries for Processing, Machine-Harvested: Estimated Cost of Production, Ontario, 1989

	Cost	
	per hectare	per acre
	- dollars -	
VARIABLE COSTS		
Hired labour, 49.4 hours/ha	292	118
Fertilizer:		
Ammonium nitrate 222 kg/ha	52	21
Muriate of potash 334 kg/ha	72	29
Insecticides	161	65
Fungicides	279	113
Herbicides	44	18
Other sprays	195	79
Manure, 22.4 tonnes/ha	247	100
Cover crop seed	12	5
Tractor and machine costs:		
Repairs and maintenance	148	60
Fuel	99	40
Custom harvesting, cooling, delivery	1,977	800
Marketing board fees	188	76
Interest on operating capital	175	71
TOTAL VARIABLE COSTS	**3,941**	**1,595**
FIXED COSTS		
Operator labour, 54.4 hours/ha	435	176
Management allowance, 5% of gross income	311	126
Tractor and machine costs:		
Depreciation	240	97
Interest on investment	178	72
Insurance and storage	52	21
Interest on land, $22,240/ha @ 6.8% per annum	1,512	612
Other overhead	99	40
TOTAL FIXED COSTS	**2,827**	**1,144**
TOTAL ALL COSTS	**6,768**	**2,739**
COST PER UNIT	**755/tonne**	**685/ton**
(Based on assumed yields of 8.97 tonnes/ha and 4 tons/acre)		
GROSS MARGIN ANALYSIS		
(Based on average prices of $691.69/tonne and $627.50/ton)[a]		
Gross income	6,202	2,510
Total variable costs	3,941	1,595
Gross margin	2,261	915
CASH ANALYSIS		
Gross income	6,202	2,510
Cash costs[b]	4,117	1,666
Returns over cash costs	2,085	844

[a] The price is the 1989 payment for a quality rating of either 95 or 96 percent.

[b] Cash costs include total variable costs plus interest on the debt portion of investment in tractors and machines of $77/ha ($31/ac.) and other overhead costs.

Table 8.--Sour Cherries for Processing, Machine-Harvested: Operation Costs, Ontario, 1989

Operation	Times over	Labour		Labour, tractor and machine costs	
		per ha.	per ac.	per ha.	per ac.
		- hours -		- dollars -	
Pruning and brush removal	1	74.1	30.0	756.10	305.99
Fertilizing	1	2.47	1.0	36.47	14.76
Cultivation	6	7.41	3.0	125.50	50.79
Mowing	2	2.47	1.0	72.62	29.39
Weed spraying	1	2.47	1.0	52.95	21.43
Spray pesticides	7	6.18	2.5	216.51	87.62
Spreading manure	1	3.71	1.5	107.31	43.43
Sow cover crop	1	2.47	1.0	31.53	12.76
General maintenance	[a]	2.47	1.0	40.18	16.26

[a] Operation performed as required.

Table 9.--Sweet Cherries for Fresh Market: Estimated Cost of Production, Ontario, 1989

	Cost per hectare	Cost per acre
	- dollars -	
VARIABLE COSTS		
Hired labour:		
Picking, 257 hours/ha	1,542	624
Grading, 124 hours/ha	741	300
Other, 35.8 hours/ha	208	84
Fertilizer:		
Ammonium nitrate 222 kg/ha	52	21
Muriate of potash 334 kg/ha	72	29
Insecticides	321	130
Fungicides	282	114
Herbicides	44	18
Manure, 22.4 tonne/ha	247	100
Cover crop seed	12	5
Containers	892	361
Tractor and machine costs:		
Repairs and maintenance	225	91
Fuel	143	58
Building, repairs and electricity	52	21
Interest on operating capital	222	90
TOTAL VARIABLE COSTS	**5,055**	**2,046**
FIXED COSTS		
Operator labour, 53.1 hours/ha	425	172
Management allowance, 5% of gross income	460	186
Tractor and machine costs:		
Depreciation	385	156
Interest on investment	267	108
Insurance and storage	99	40
Building use	237	96
Interest on land, $22,240/ha @ 6.8% per annum	1,512	612
Other overhead	99	40
TOTAL FIXED COSTS	**3,484**	**1,410**
TOTAL ALL COSTS	**8,539**	**3,456**
COST PER UNIT	**1,906/tonne**	**1,728/ton**
(Based on assumed yields of 4.48 tonnes/ha and 2 tons/acre)		
GROSS MARGIN ANALYSIS		
(Based on average prices of $2,048.60/tonne and $17.70/3x4 L master)[a]		
Gross income	9,185	3,717
Total variable costs	5,055	2,046
Gross margin	4,130	1,671
CASH ANALYSIS		
Gross income	9,185	3,717
Cash costs[b]	5,270	2,133
Returns over cash costs	3,915	1,584

[a] The 1989 price is an average of the previous three years for sweet cherries sold through the Central Fruit Exchange.

[b] Cash costs include total variable costs plus interest on the debt portion of investment in tractors and machines of $116/ha ($47/ac.) and other overhead costs.

Table 10.--Sweet Cherries for Fresh Market: Operation Costs, Ontario, 1989

Operation	Times over	Labour		Labour, tractor and machine costs	
		per ha.	per ac.	per ha.	per ac.
		- hours -		- dollars -	
Pruning and brush removal	1	47.0	19.0	474.21	191.91
Fertilizing	1	2.47	1.0	36.47	14.76
Cultivation	4	4.94	2.0	83.67	33.86
Mowing	3	3.71	1.5	108.92	44.08
Weed spraying	1	2.47	1.0	52.95	21.43
Spray pesticides	8	9.88	4.0	346.43	140.20
Spreading manure	1	3.71	1.5	107.31	43.43
Sow cover crop	1	2.47	1.0	31.53	12.76
General maintenance	[a]	2.47	1.0	40.18	16.26
Distribute and collect containers	[a]	9.88	4.0	151.49	61.31
Picking	[a]	247	100.0	1,517.91	614.29
Sorting & grading	[a]	124	50.0	783.26	316.98
Marketing/delivery	[a]	9.88	4.0	300.77	121.72

[a] Operation performed as required.

Table 11.--Sweet Cherries for Canning and Freezing Purposes: Estimated Cost of Production, Ontario, 1989

	Cost	
	per hectare	per acre
	- dollars -	
VARIABLE COSTS		
Hired labour:		
Picking, 232 hours/ha	1,394	564
Grading, 124 hours/ha	741	300
Other, 35.8 hours/ha	208	84
Fertilizer:		
Ammonium nitrate 222 kg/ha	52	21
Muriate of potash 334 kg/ha	72	29
Insecticides	321	130
Fungicides	282	114
Herbicides	44	18
Manure, 22.4 tonne/ha	247	100
Cover crop seed	12	5
Tractor and machine costs:		
Repairs and maintenance	225	91
Fuel	143	58
Building, repairs and electricity	37	15
Marketing board fees	59	24
Interest on operating capital	178	72
TOTAL VARIABLE COSTS	**4,015**	**1,625**
FIXED COSTS		
Operator labour, 53.1 hours/ha	425	172
Management allowance, 5% of gross income	316	128
Tractor and machine costs:		
Depreciation	385	156
Interest on investment	267	108
Insurance and storage	99	40
Building use	237	96
Interest on land, $22,240/ha @ 6.8% per annum	1,512	612
Other overhead	99	40
TOTAL FIXED COSTS	**3,340**	**1,352**
TOTAL ALL COSTS	**7,355**	**2,977**
COST PER UNIT	**1,642/tonne**	**1,488/ton**
(Based on assumed yields of 4.48 tonnes/ha and 2 tons/acre)		
GROSS MARGIN ANALYSIS		
(Based on average prices of $1,412.60/tonne and $1,281.50/ton)[a]		
Gross income	6,333	2,563
Total variable costs	4,015	1,625
Gross margin	2,318	938
CASH ANALYSIS		
Gross income	6,333	2,563
Cash costs[b]	4,230	1,712
Returns over cash costs	2,103	851

[a] The price is the 1989 payment for sweet cherries sold through the Ontario Tender Fruit Producers' Marketing Board.

[b] Cash costs include total variable costs plus interest on the debt portion of investment in tractors and machines of $116/ha ($47/ac.) and other overhead costs.

Table 12.--Sweet Cherries for Canning and Freezing Purposes: Operation Costs, Ontario, 1989

Operation	Times over	Labour		Labour, tractor and machine costs	
		per ha.	per ac.	per ha.	per ac.
		- hours -		- dollars -	
Pruning and brush removal	1	47.0	19.0	474.21	191.91
Fertilizing	1	2.47	1.0	36.47	14.76
Cultivation	4	4.94	2.0	83.67	33.86
Mowing	3	3.71	1.5	108.92	44.08
Weed spraying	1	2.47	1.0	52.95	21.43
Spray pesticides	8	9.88	4.0	346.43	140.20
Spreading manure	1	3.71	1.5	107.31	43.43
Sow cover crop	1	2.47	1.0	31.53	12.76
General maintenance	[a]	2.47	1.0	40.18	16.26
Distribute and collect containers	[a]	9.88	4.0	151.49	61.31
Picking	[a]	222	90.0	1,369.65	554.29
Sort and grade	[a]	124	50.0	783.26	316.98
Marketing/delivery	[a]	9.88	4.0	300.77	121.72

[a] Operation performed as required.

Table 13.--Sweet Cherries for Maraschino Purposes: Estimated Cost of Production, Ontario, 1989

	Cost per hectare	Cost per acre
	- dollars -	
VARIABLE COSTS		
Hired labour:		
Picking, 257 hours/ha	1,542	624
Grading, 124 hours/ha	741	300
Other, 35.8 hours/ha	208	84
Fertilizer:		
Ammonium nitrate 222 kg/ha	52	21
Muriate of potash 334 kg/ha	72	29
Insecticides	321	130
Fungicides	282	114
Herbicides	44	18
Manure, 22.4 tonnes/ha	247	100
Cover crop seed	12	5
Tractor and machine costs:		
Repairs and maintenance	225	91
Fuel	143	58
Building, repairs and electricity	37	15
Marketing board fees	59	24
Interest on operating capital	185	75
TOTAL VARIABLE COSTS	**4,170**	**1,688**
FIXED COSTS		
Operator labour, 53.1 hours/ha	425	172
Management allowance, 5% of gross income	178	72
Tractor and machine costs:		
Depreciation	385	156
Interest on investment	267	108
Insurance and storage	99	40
Building use	237	96
Interest on land, $22,240/ha @ 6.8% per annum	1,512	612
Other overhead	99	40
TOTAL FIXED COSTS	**3,202**	**1,296**
TOTAL ALL COSTS	**7,372**	**2,984**
COST PER UNIT	**1,646/tonne**	**1,492/ton**
(Based on assumed yields of 4.48 tonnes/ha and 2 tons/acre)		
GROSS MARGIN ANALYSIS		
(Based on average prices of $795.31/tonne and $721.50/ton)[a]		
Gross income	3,566	1,443
Total variable costs	4,170	1,688
Gross margin	-604	-245
CASH ANALYSIS		
Gross income	3,566	1,443
Cash costs[b]	4,385	1,775
Returns over cash costs	-819	-332

[a] The price is the 1989 payment for sweet cherries sold through the Ontario Tender Fruit Producers' Marketing Board.

[b] Cash costs include total variable costs plus interest on the debt portion of investment in tractors and machines of $116/ha ($47/ac.) and other overhead costs.

Table 14.--Sweet Cherries for Maraschino Purposes: Operation Costs, Ontario, 1989

Operation	Times over	Labour		Labour, tractor and machine costs	
		per ha.	per ac.	per ha.	per ac.
		- hours -		- dollars -	
Pruning and brush removal	1	47.0	19.0	474.21	191.91
Fertilizing	1	2.47	1.0	36.47	14.76
Cultivation	4	4.94	2.0	83.67	33.86
Mowing	3	3.71	1.5	108.92	44.08
Weed spraying	1	2.47	1.0	52.95	21.43
Spray pesticides	8	9.88	4.0	346.43	140.20
Spreading manure	1	3.71	1.5	107.31	43.43
Sow cover crop	1	2.47	1.0	31.53	12.76
General maintenance	[a]	2.47	1.0	40.18	16.26
Distribute and collect containers	[a]	9.88	4.0	151.49	61.31
Picking	[a]	247	100.0	1,517.91	614.29
Sort and grade	[a]	124	50.0	783.26	316.98
Marketing/delivery	[a]	9.88	4.0	300.77	121.72

[a] Operation performed as required.

Table 15.--Concord Grapes for Processing: Estimated Cost of Production, Ontario, 1989

	Cost per hectare	Cost per acre
	- dollars -	
VARIABLE COSTS		
Hired labour, 103 hours/ha	660	267
Fertilizer:		
Ammonium nitrate 111 kg/ha	27	11
Mur. of pot., 334 kg/ha	72	29
Manure, 11.2 tonne/ha	124	50
Insecticides	67	27
Fungicides	126	51
Herbicides	74	30
Cover crop seed	12	5
Tying material	25	10
Trellis maintenance	30	12
Tractor and machine costs:		
Repairs and maintenance	82	33
Fuel	47	19
Custom harvest/delivery	516	209
Marketing board fees	74	30
Interest on operating capital	136	55
TOTAL VARIABLE COSTS	**2,072**	**838**
FIXED COSTS		
Operator labour, 27.2 hours/ha	217	88
Management allowance, 5% of gross income	126	51
Tractor and machine costs:		
Depreciation	185	75
Interest on investment	133	54
Insurance and storage	40	16
Interest on land, $11,120/ha @ 6.8% per annum	756	306
Other overhead	62	25
TOTAL FIXED COSTS	**1,519**	**615**
TOTAL ALL COSTS	**3,591**	**1,453**
COST PER UNIT	**421/tonne**	**382/ton**
(Based on average yields of 8.52 tonne/ha and 3.8 ton/acre)		
GROSS MARGIN ANALYSIS		
(Based on average prices of $298.72/tonne and $271.00/ton)[a]		
Gross income	2,545	1,030
Total variable costs	2,072	838
Gross margin	473	192
CASH ANALYSIS		
Gross income	2,545	1,030
Cash costs[b]	2,193	887
Returns over cash costs	352	143

[a] The 1989 price is an average of the previous three years for Concord grapes sold through the Ontario Grape Growers' Marketing Board.

[b] Cash costs include total variable costs plus interest on the debt portion of investment in tractors and machines of $59/ha ($24/ac.) and other overhead costs.

Table 16.--Concord Grapes for Processing: Operation Costs, Ontario, 1989

Operation	Times over	Labour		Labour, tractor and machine costs	
		per ha.	per ac.	per ha.	per ac.
		- hours -		- dollars -	
Pruning	1	49.4	20.0	365.71	148.00
Brush removal	1	2.47	1.0	39.36	15.93
Tying	1	37.1	15.0	222.39	90.00
Fertilizing	1	1.24	0.5	26.59	10.76
Manure spreading	1	3.71	1.5	107.31	43.43
Discing	2	2.47	1.0	41.83	16.93
Rotovating	1	2.47	1.0	47.74	19.32
Weed spraying	1	1.24	0.5	26.49	10.72
Spray pesticides	4	3.71	1.5	129.90	52.57
Sow cover crop	1	1.24	0.5	24.12	9.76
Summer pruning and suckering	[a]	12.4	5.0	74.13	30.00
Mowing	1	2.47	1.0	72.62	29.39
Ditching and grading	[a]	2.47	1.0	46.48	18.81
Vineyard maintenance	[a]	7.41	3.0	138.77	56.16

[a] Operation performed as required.

Table 17.--DeChaunac Grapes for Processing: Estimated Cost of Production, Ontario, 1989

	Cost per hectare	Cost per acre
	- dollars -	
VARIABLE COSTS		
Hired labour, 182 hours/ha	1,134	459
Fertilizer:		
Ammonium nitrate 111 kg/ha	27	11
Mur. of potash, 334 kg/ha	72	29
Manure, 11.2 tonne/ha	124	50
Insecticides	77	31
Fungicides	183	74
Herbicides	74	30
Cover crop seed	12	5
Tying material	27	11
Trellis maintenance	10	4
Tractor and machine costs:		
Repairs and maintenance	91	37
Fuel	49	20
Custom harvest and delivery	598	242
Marketing board fees	86	35
Interest on operating capital	180	73
TOTAL VARIABLE COSTS	**2,744**	**1,111**
FIXED COSTS		
Operator labour, 32.1 hours/ha	257	104
Management allowance, 5% of gross income	158	64
Tractor and machine costs:		
Depreciation	195	79
Interest on investment	141	57
Insurance and storage	42	17
Interest on land, $11,120/ha @ 6.8% per annum	756	306
Other overhead	62	25
TOTAL FIXED COSTS	**1,611**	**652**
TOTAL ALL COSTS	**4,355**	**1,763**
COST PER UNIT (Based on average yields of 9.86 tonne/ha and 4.4 ton/acre)	**442/tonne**	**401/ton**
GROSS MARGIN ANALYSIS (Based on average prices of $322.97/tonne and $293.00/ton)[a]		
Gross income	3,186	1,289
Total variable costs	2,744	1,111
Gross margin	442	178
CASH ANALYSIS		
Gross income	3,186	1,289
Cash costs[b]	2,868	1,161
Returns over cash costs	318	128

[a] The 1989 price is an average of the previous three years for DeChaunac grapes sold through the Ontario Grape Growers' Marketing Board.

[b] Cash costs include total variable costs plus interest on the debt portion of investment in tractors and machines of $62/ha ($25/ac.) and other overhead costs.

Table 18.--DeChaunac Grapes for Processing: Operation Costs, Ontario, 1989

Operation	Times over	Labour		Labour, tractor and machine costs	
		per ha.	per ac.	per ha.	per ac.
		- hours -		- dollars -	
Pruning	1	59.3	24.0	429.96	174.00
Brush removal	1	2.47	1.0	39.36	15.93
Tying	1	43.2	17.5	259.45	105.00
Fertilizing	1	1.24	0.5	26.59	10.76
Manure spreading	1	3.71	1.5	107.31	43.43
Discing	2	2.47	1.0	41.83	16.93
Rotovating	1	2.47	1.0	47.74	19.32
Thinning	[a]	61.8	25.0	370.65	150.00
Weed spraying	1	1.24	0.5	26.49	10.72
Spray pesticides	5	4.94	2.0	173.22	70.10
Sow cover crop	1	1.24	0.5	26.59	10.76
Mowing	1	2.47	1.0	72.62	29.39
Summer pruning and suckering	[a]	19.8	8.0	118.61	48.00
Ditching and grading	[a]	2.47	1.0	46.48	18.81
Vineyard maintenance	[a]	4.94	2.0	123.95	50.16

[a] Operation performed as required.

Table 19.--J. Riesling Grapes for Processing: Estimated Cost of Production, Ontario, 1989

	Cost per hectare	Cost per acre
	- dollars -	
VARIABLE COSTS		
Hired labour, 189 hours/ha	1,134	459
Fertilizer:		
Ammonium nitrate 111 kg/ha	27	11
Mur. of potash, 334 kg/ha	72	29
Manure, 11.2 tonne/ha	124	50
Insecticides	94	38
Fungicides	519	210
Herbicides	74	30
Cover crop seed	12	5
Tying material	40	16
Trellis maintenance	17	7
Tractor and machine costs:		
Repairs and maintenance	148	60
Fuel	74	30
Custom harvest and delivery	625	253
Marketing board fees	91	37
Interest on operating capital	213	86
TOTAL VARIABLE COSTS	**3,264**	**1,321**
FIXED COSTS		
Operator labour, 84.0 hours/ha	672	272
Management allowance, 5% of gross income	410	166
Tractor and machine costs:		
Depreciation	282	114
Interest on investment	205	83
Insurance and storage	59	24
Interest on land, $11,120/ha @ 6.8% per annum	756	306
Other overhead	62	25
TOTAL FIXED COSTS	**2,446**	**990**
TOTAL ALL COSTS	**5,710**	**2,311**
COST PER UNIT (Based on average yields of 10.31 tonne/ha and 4.6 ton/acre)	**554/tonne**	**502/ton**
GROSS MARGIN ANALYSIS (Based on average prices of $795.86/tonne and $722.00/ton)[a]		
Gross income	8,207	3,321
Total variable costs	3,264	1,321
Gross margin	4,943	2,000
CASH ANALYSIS		
Gross income	8,207	3,321
Cash costs[b]	3,415	1,382
Returns over cash costs	4,792	1,939

[a] The 1989 price is an average of the previous three years for J. Riesling grapes sold through the Ontario Grape Growers' Marketing Board.

[b] Cash costs include total variable costs plus interest on the debt portion of investment in tractors and machines of $89/ha ($36/ac.) and other overhead costs.

Table 20.--J. Riesling Grapes for Processing: Operation Costs, Ontario, 1989

Operation	Times over	Labour		Labour, tractor and machine costs	
		per ha.	per ac.	per ha.	per ac.
		- hours -		- dollars -	
Pruning	1	96.3	39.0	642.46	260.00
Brush removal	1	2.47	1.0	44.31	17.93
Tying	1	54.4	22.0	326.17	132.00
Fertilizing	2	2.47	1.0	53.15	21.51
Spreading manure	1	3.71	1.5	107.31	43.43
Discing	2	2.47	1.0	41.83	16.93
Rotovating	1	2.47	1.0	47.74	19.32
Weed spraying	1	1.24	0.5	26.49	10.72
Spray pesticides	8	8.65	3.5	303.12	122.67
Suckering	[a]	12.4	5.0	74.13	30.00
Hilling up & down	1	6.18	2.5	123.18	49.85
Sow cover crop	1	1.24	0.5	24.12	9.76
Mowing	2	4.94	2.0	145.25	58.78
Summer pruning, tucking & tying	[a]	66.7	27.0	444.78	180.00
Ditching and grading	[a]	2.47	1.0	46.48	18.81
Vineyard maintenance	[a]	4.94	2.0	61.31	24.81

[a] Operation performed as required.

Table 21.--Seyval Blanc Grapes for Processing: Estimated Cost of Production, Ontario, 1989

	Cost per hectare	Cost per acre
	- dollars -	
VARIABLE COSTS		
Hired labour, 221 hours/ha	1,327	537
Fertilizer:		
Ammonium nitrate 111 kg/ha	27	11
Mur. of potash, 334 kg/ha	72	29
Manure, 11.2 tonne/ha	124	50
Insecticides	94	38
Fungicides	380	154
Herbicides	74	30
Cover crop seed	12	5
Tying material	37	15
Trellis maintenance	17	7
Tractor and machine costs:		
Repairs and maintenance	128	52
Fuel	59	24
Custom harvest and delivery	680	275
Marketing board fees	99	40
Interest on operating capital	220	89
TOTAL VARIABLE COSTS	**3,350**	**1,356**
FIXED COSTS		
Operator labour, 49.4 hours/ha	395	160
Management allowance, 5% of gross income	319	129
Tractor and machine costs:		
Depreciation	245	99
Interest on investment	178	72
Insurance and storage	52	21
Interest on land, $11,120/ha @ 6.8% per annum	756	306
Other overhead	62	25
TOTAL FIXED COSTS	**2,007**	**812**
TOTAL ALL COSTS	**5,357**	**2,168**
COST PER UNIT	**478/tonne**	**434/ton**
(Based on average yields of 11.2 tonne/ha and 5.0 ton/acre)		
GROSS MARGIN ANALYSIS		
(Based on average prices of $567.68/tonne and $515.00/ton)[a]		
Gross income	6,363	2,575
Total variable costs	3,350	1,356
Gross margin	3,013	1,219
CASH ANALYSIS		
Gross income	6,363	2,575
Cash costs[b]	3,491	1,413
Returns over cash costs	2,872	1,162

[a] The 1989 price is an average of the previous three years for Seyval Blanc grapes sold through the Ontario Grape Growers' Marketing Board.

[b] Cash costs include total variable costs plus interest on the debt portion of investment in tractors and machines of $79/ha ($32/ac.) and other overhead costs.

Table 22.--Seyval Blanc Grapes for Processing: Operation Costs, Ontario, 1989

Operation	Times over	Labour		Labour, tractor and machine costs	
		per ha.	per ac.	per ha.	per ac.
		- hours -		- dollars -	
Pruning	1	81.5	33.0	543.62	220.00
Brush removal	1	2.47	1.0	44.31	17.93
Tying	1	59.3	24.0	355.82	144.00
Fertilizing	2	2.47	1.0	53.15	21.51
Spreading manure	1	3.71	1.5	107.31	43.43
Discing	2	2.47	1.0	41.83	16.93
Rotovating	1	2.47	1.0	47.74	19.32
Weed spraying	1	1.24	0.5	26.49	10.72
Spray pesticides	7	7.41	3.0	259.83	105.15
Sow cover crop	1	1.24	0.5	24.12	9.76
Mowing	2	4.94	2.0	145.25	58.78
Suckering	[a]	14.8	6.0	88.96	36.00
Thinning	[a]	79.1	32.0	474.43	192.00
Ditching and grading	[a]	2.47	1.0	46.48	18.81
Vineyard maintenance	[a]	4.94	2.0	123.95	24.81

[a] Operation performed as required.

Table 23.--Clingstone Peaches (108 trees/acre) for Processing: Estimated Cost of Production, Ontario, 1989

	Cost	
	per hectare	per acre
	- dollars -	
VARIABLE COSTS		
Hired labour:		
Harvesting, 198 hours/ha	1,186	480
Grading, 39.5 hours/ha	237	96
Other, 173 hours/ha	1,028	416
Fertilizer:		
Ammonium nitrate 222 kg/ha	52	21
Muriate of potash 334 kg/ha	72	29
Insecticides	393	159
Fungicides	514	208
Herbicides	44	18
Manure, 11.2 tonne/ha	124	50
Replacement trees, 12/ha	69	28
Tractor and machine costs:		
Repairs and maintenance	245	99
Fuel	163	66
Building, repairs and electricity	37	15
Marketing board fees	148	60
Interest on operating capital	200	81
TOTAL VARIABLE COSTS	**4,512**	**1,826**
FIXED COSTS		
Operator labour, 60.5 hours/ha	484	196
Management allowance, 5% of gross income	289	117
Tractor and machine costs:		
Depreciation	435	176
Interest on investment	299	121
Insurance and storage	104	42
Building use	237	96
Interest on land, $22,240/ha @ 6.8% per annum	1,512	612
Other overhead	99	40
TOTAL FIXED COSTS	**3,459**	**1,400**
TOTAL ALL COSTS	**7,971**	**3,226**
COST PER UNIT	**712/tonne**	**645/ton**
(Based on assumed yields of 11.2 tonne/ha and 5 ton/acre)		
GROSS MARGIN ANALYSIS		
(Based on average prices of $515.00/tonne and $467.20/ton)[a]		
Gross income	5,772	2,336
Total variable costs	4,512	1,826
Gross margin	1,260	510
CASH ANALYSIS		
Gross income	5,772	2,336
Cash costs[b]	4,742	1,919
Returns over cash costs	1,030	417

[a] The 1989 price is an average of the previous three years for Clingstone peaches sold through the Ontario Tender Fruit Producers' Marketing Board.

[b] Cash costs include total variable costs plus interest on the debt portion of investment in tractors and machines of $131/ha ($53/ac.) and other overhead costs.

Table 24.--Clingstone Peaches (108 trees/acre) for Processing: Operation Costs, Ontario, 1989

Operation	Times over	Labour		Labour, tractor and machine costs	
		per ha.	per ac.	per ha.	per ac.
		- hours -		- dollars -	
Planting replacement trees	[a]	2.47	1.0	19.77	8.00
Pruning and brush removal	1	98.8	40.0	803.62	325.22
Cultivation	4	4.94	2.0	83.67	33.86
Spreading manure	1	3.71	1.5	107.31	43.43
Fertilizing	1	2.47	1.0	36.47	14.76
Weed spraying	1	2.47	1.0	52.95	21.43
Spray pesticides	10	9.88	4.0	346.43	140.20
Hand thinning	1	89.0	36.0	533.74	216.00
Mowing	4	4.94	2.0	145.25	58.78
General maintenance	[a]	7.41	3.0	103.09	41.72
Distribute and collect containers	[a]	24.7	10.0	369.73	149.63
Picking	[a]	173	70.0	1,073.13	434.29
Grading	[a]	39.5	16.0	279.17	112.98
Marketing/delivery	[a]	7.41	3.0	225.58	91.29

[a] Operation performed as required.

Table 25.--Clingstone Peaches (145 trees/acre) for Processing: Estimated Cost of Production, Ontario, 1989

	Cost per hectare	Cost per acre
	- dollars -	
VARIABLE COSTS		
Hired labour:		
Harvesting, 277 hours/ha	1,661	672
Grading, 49.4 hours/ha	297	120
Other, 227 hours/ha	1,352	547
Fertilizer:		
Ammonium nitrate 222 kg/ha	52	21
Muriate of potash 334 kg/ha	72	29
Insecticides	393	159
Fungicides	514	208
Herbicides	44	18
Manure, 11.2 tonne/ha	124	50
Replacement trees, 17/ha	96	39
Tractor and machine costs:		
Repairs and maintenance	279	113
Fuel	205	83
Building, repairs and electricity	37	15
Marketing board fees	208	84
Interest on operating capital	247	100
TOTAL VARIABLE COSTS	**5,581**	**2,258**
FIXED COSTS		
Operator labour, 72.9 hours/ha	583	236
Management allowance, 5% of gross income	405	164
Tractor and machine costs:		
Depreciation	507	205
Interest on investment	343	139
Insurance and storage	124	50
Building use	237	96
Interest on land, $22,240/ha @ 6.8% per annum	1,512	612
Other overhead	99	40
TOTAL FIXED COSTS	**3,810**	**1,542**
TOTAL ALL COSTS	**9,391**	**3,800**
COST PER UNIT	**598/tonne**	**543/ton**
(Based on assumed yields of 15.7 tonnes/ha and 7.0 tons/acre)		
GROSS MARGIN ANALYSIS		
(Based on average prices of $515.00/tonne and $467.20/ton)[a]		
Gross income	8,081	3,270
Total variable costs	5,581	2,258
Gross margin	2,500	1,012
CASH ANALYSIS		
Gross income	8,081	3,270
Cash costs[b]	5,831	2,359
Returns over cash costs	2,250	911

[a] The 1989 price is an average of the previous three years for Clingstone peaches sold through the Ontario Tender Fruit Producers' Marketing Board.

[b] Cash costs include total variable costs plus interest on the debt portion of investment in tractors and machines of $151/ha ($61/ac.) and other overhead costs.

Table 26.--Clingstone Peaches (145 trees/acre) for Processing: Operation Costs, Ontario, 1989

Operation	Times over	Labour		Labour, tractor and machine costs	
		per ha.	per ac.	per ha.	per ac.
		- hours -		- dollars -	
Planting replacement trees	[a]	2.47	1.0	19.77	8.00
Pruning and brush removal	1	133	54.0	1,101.03	445.58
Cultivation	4	4.94	2.0	83.67	33.86
Spreading manure	1	3.71	1.5	107.31	43.43
Fertilizing	1	2.47	1.0	36.47	14.76
Weed spraying	1	2.47	1.0	52.95	21.43
Spray pesticides	10	9.88	4.0	346.43	140.20
Hand thinning	1	119	48.0	711.65	288.00
Mowing	4	4.94	2.0	145.25	58.78
General maintenance	[a]	7.41	3.0	103.09	41.72
Distribute and collect containers	[a]	34.6	14.0	515.22	208.51
Picking	[a]	242	98.0	1,488.26	602.29
Grading	[a]	49.4	20.0	338.48	136.98
Marketing/delivery	[a]	9.88	4.0	300.77	121.72

[a] Operation performed as required.

Table 27.--Freestone Peaches (108 trees/acre) for Fresh Market: Estimated Cost of Production, Ontario, 1989

	Cost per hectare	Cost per acre
	- dollars -	
VARIABLE COSTS		
Hired labour:		
Harvesting, 247 hours/ha	1,483	600
Grading, 79.1 hours/ha	474	192
Other, 173 hours/ha	1,028	416
Fertilizer:		
Ammonium nitrate 222 kg/ha	52	21
Muriate of potash 334 kg/ha	72	29
Insecticides	393	159
Fungicides	514	208
Herbicides	44	18
Manure, 11.2 tonne/ha	124	50
Replacement trees, 12/ha	69	28
Containers	2,264	916
Tractor and machine costs:		
Repairs and maintenance	259	105
Fuel	183	74
Building, repairs and electricity	59	24
Interest on operating capital	324	131
TOTAL VARIABLE COSTS	**7,342**	**2,971**
FIXED COSTS		
Operator labour, 65.5 hours/ha	524	212
Management allowance, 5% of gross income	497	201
Tractor and machine costs:		
Depreciation	472	191
Interest on investment	319	129
Insurance and storage	121	49
Building use	237	96
Interest on land, $22,240/ha @ 6.8% per annum	1,512	612
Other overhead	99	40
TOTAL FIXED COSTS	**3,781**	**1,530**
TOTAL ALL COSTS	**11,123**	**4,501**
COST PER UNIT	**993/tonne**	**900/ton**
(Based on assumed yields of 11.2 tonnes/ha and 5 tons/acre)		
GROSS MARGIN ANALYSIS		
(Based on average prices of $887.35/tonne and $8.05/3x4 L master)[a]		
Gross income	9,946	4,025
Total variable costs	7,342	2,971
Gross margin	2,604	1,054
CASH ANALYSIS		
Gross income	9,946	4,025
Cash costs[b]	7,582	3,068
Returns over cash costs	2,364	957

[a] The 1989 price is an average of the previous three years for peaches sold through the Central Fruit Exchange.

[b] Cash costs include total variable costs plus interest on the debt portion of investment in tractors and machines of $141/ha ($57/ac.) and other overhead costs.

Table 28.--Freestone Peaches (108 trees/acre) for Fresh Market: Operation Costs, Ontario, 1989

Operation	Times over	Labour		Labour, tractor and machine costs	
		per ha.	per ac.	per ha.	per ac.
		- hours -		- dollars -	
Planting replacement trees	[a]	2.47	1.0	19.77	8.00
Pruning and brush removal	1	98.8	40.0	803.62	325.22
Cultivation	4	4.94	2.0	83.67	33.86
Spreading manure	1	3.71	1.5	107.31	43.43
Fertilizing	1	2.47	1.0	36.47	14.76
Weed spraying	1	2.47	1.0	52.95	21.43
Spray pesticides	10	9.88	4.0	346.43	140.20
Hand thinning	1	89.0	36.0	533.74	216.00
Mowing	4	4.94	2.0	145.25	58.78
General maintenance	[a]	2.47	3.0	103.09	41.72
Distribute and collect containers	[a]	24.7	10.0	369.73	149.63
Picking	[a]	222.	90.0	1,369.65	554.29
Grade and pack	[a]	79.1	32.0	516.39	208.98
Marketing/delivery	[a]	12.4	5.0	375.96	152.15

[a] Operation performed as required.

Table 29.--Freestone Peaches (145 trees/acre) for Fresh Market: Estimated Cost of Production, Ontario, 1989

	Cost per hectare	Cost per acre
	- dollars -	
VARIABLE COSTS		
Hired labour:		
Harvesting, 346 hours/ha	2,076	840
Grading, 99 hours/ha	593	240
Other, 227 hours/ha	1,352	547
Fertilizer:		
Ammonium nitrate 222 kg/ha	52	21
Muriate of potash 334 kg/ha	72	29
Insecticides	393	159
Fungicides	514	208
Herbicides	44	18
Manure, 11.2 tonne/ha	124	50
Replacement trees, 17/ha	96	39
Containers	3,168	1,282
Tractor and machine costs:		
Repairs and maintenance	289	117
Fuel	215	87
Building, repairs and electricity	59	24
Interest on operating capital	420	170
TOTAL VARIABLE COSTS	**9,467**	**3,831**
FIXED COSTS		
Operator labour, 75 hours/ha	603	244
Management allowance, 5% of gross income	697	282
Tractor and machine costs:		
Depreciation	526	213
Interest on investment	353	143
Insurance and storage	131	53
Building use	237	96
Interest on land, $22,240/ha @ 6.8% per annum	1,512	612
Other overhead	99	40
TOTAL FIXED COSTS	**4,158**	**1,683**
TOTAL ALL COSTS	**13,625**	**5,514**
COST PER UNIT	**868/tonne**	**788/ton**
(Based on assumed yields of 15.7 tonnes/ha and 7.0 tons/acre)		
GROSS MARGIN ANALYSIS		
(Based on average prices of $887.35/tonne and $8.05/3x4 L master)[a]		
Gross income	13,925	5,635
Total variable costs	9,467	3,831
Gross margin	4,458	1,804
CASH ANALYSIS		
Gross income	13,925	5,635
Cash costs[b]	9,722	3,934
Returns over cash costs	4,203	1,701

[a] The 1989 price is an average of the previous three years for peaches sold through the Central Fruit Exchange.

[b] Cash costs include total variable costs plus interest on the debt portion of investment in tractors and machines of $156/ha ($63/ac.) and other overhead costs.

Table 30.--Freestone Peaches (145 trees/acre) for Fresh Market: Operation Costs, Ontario, 1989

Operation	Times over	Labour		Labour, tractor and machine costs	
		per ha.	per ac.	per ha.	per ac.
		- hours -		- dollars -	
Planting replacement trees	a	2.47	1.0	19.77	8.00
Pruning and brush removal	1	133	54.0	1,101.03	445.58
Cultivation	4	4.94	2.0	83.67	33.86
Spreading manure	1	3.71	1.5	107.31	43.43
Fertilizing	1	2.47	1.0	36.47	14.76
Weed spraying	1	2.47	1.0	52.95	21.43
Spray pesticides	10	9.88	4.0	346.43	140.20
Hand thinning	1	119	48.0	711.65	288.00
Mowing	4	4.94	2.0	145.25	58.78
General maintenance	[a]	2.47	3.0	103.09	41.72
Distribute and collect containers	[a]	34.6	14.0	515.22	208.51
Picking	[a]	311	126	1,903.39	770.29
Grade and pack	[a]	98.8	40.0	635.00	256.98
Marketing/delivery	[a]	12.4	5.0	375.96	152.15

[a] Operation performed as required.

Table 31.--Bartlett Pears for Fresh Market: Estimated Cost of Production, Ontario, 1989

	Cost per hectare	Cost per acre
	- dollars -	
VARIABLE COSTS		
Hired labour:		
Harvesting, 119 hours/ha	521	211
Grading, 29.7 hours/ha	178	72
Other, 49.4 hours/ha	287	116
Fertilizer:		
Ammonium nitrate 222 kg/ha	52	21
Muriate of potash 334 kg/ha	72	29
Insecticides	418	169
Fungicides	44	18
Herbicides	44	18
Manure, 11.2 tonne/ha	124	50
Cover crop seed	12	5
Containers	1,530	619
Tractor and machine costs:		
Repairs and maintenance	210	85
Fuel	168	68
Building, repairs and electricity	69	28
Interest on operating capital	171	69
TOTAL VARIABLE COSTS	**3,900**	**1,578**
FIXED COSTS		
Operator labour, 63.0 hours/ha	504	204
Management allowance, 5% of gross income	348	141
Tractor and machine costs:		
Depreciation	390	158
Interest on investment	264	107
Insurance and storage	99	40
Building use	237	96
Interest on land, $11,120/ha @ 6.8% per annum	756	306
Other overhead	99	40
TOTAL FIXED COSTS	**2,697**	**1,092**
TOTAL ALL COSTS	**6,597**	**2,670**
COST PER UNIT	**735/tonne**	**668/ton**
(Based on assumed yields of 8.97 tonnes/ha and 4 tons/acre)		
GROSS MARGIN ANALYSIS		
(Based on average prices of $778.77/tonne and $7.85/3x4 L master)[a]		
Gross income	6,983	2,826
Total variable costs	3,900	1,578
Gross margin	3,083	1,248
CASH ANALYSIS		
Gross income	6,983	2,826
Cash costs[b]	4,115	1,665
Returns over cash costs	2,868	1,161

[a] The 1989 price is an average of the previous three years for Bartlett pears sold through the Central Fruit Exchange.

[b] Cash costs include total variable costs plus interest on the debt portion of investment in tractors and machines of $116/ha ($47/ac.) and other overhead costs.

Table 32.--Bartlett Pears for Fresh Market: Operation Costs, Ontario, 1989

Operation	Times over	Labour		Labour, tractor and machine costs	
		per ha.	per ac.	per ha.	per ac.
		- hours -		- dollars -	
Pruning and brush removal	1	76.6	31.0	767.84	310.74
Fertilizing	1	2.47	1.0	36.47	14.76
Cultivation	4	4.94	2.0	83.67	33.86
Mowing	2	2.47	1.0	72.62	29.39
Weed spraying	1	2.47	1.0	52.95	21.43
Spray pesticides	6	4.94	2.0	173.22	70.10
Manure spreading	1	3.71	1.5	107.31	43.43
Sow cover crop	1	2.47	1.0	31.53	12.76
General maintenance	[a]	2.47	1.0	40.18	16.26
Distribute and collect containers	[a]	19.8	8.0	296.98	120.19
Picking	[a]	98.8	40.0	438.58	177.49
Sort and grade	[a]	29.7	12.0	219.87	88.98
Marketing/delivery	[a]	9.88	4.0	300.77	121.72

[a] Operation performed as required.

Table 33.--Bartlett Pears for Processing: Estimated Cost of Production, Ontario, 1989

	Cost per hectare	Cost per acre
	- dollars -	
VARIABLE COSTS		
Hired labour:		
Harvesting, 119 hours/ha	521	211
Grading, 29.7 hours/ha	178	72
Other, 49.4 hours/ha	287	116
Fertilizer:		
Ammonium nitrate 222 kg/ha	52	21
Muriate of potash 334 kg/ha	72	29
Insecticides	417	169
Fungicides	44	18
Herbicides	44	18
Manure, 11.2 tonne/ha	124	50
Cover crop seed	12	5
Tractor and machine costs:		
Repairs and maintenance	210	85
Fuel	168	68
Building, repairs and electricity	37	15
Marketing board fees	119	48
Interest on operating capital	104	42
TOTAL VARIABLE COSTS	**2,389**	**967**
FIXED COSTS		
Operator labour, 63.0 hours/ha	504	204
Management allowance, 5% of gross income	175	71
Tractor and machine costs:		
Depreciation	390	158
Interest on investment	264	107
Insurance and storage	99	40
Building use	237	96
Interest on land, $11,120/ha @ 6.8% per annum	756	306
Other overhead	99	40
TOTAL FIXED COSTS	**2,524**	**1,022**
TOTAL ALL COSTS	**4,913**	**1,989**
COST PER UNIT	**548/tonne**	**497/ton**
(Based on assumed yields of 8.97 tonnes/ha and 4 tons/acre)		
GROSS MARGIN ANALYSIS		
(Based on average prices of $391.10/tonne and $354.80/ton)[a]		
Gross income	3,507	1,419
Total variable costs	2,389	967
Gross margin	1,118	452
CASH ANALYSIS		
Gross income	3,507	1,419
Cash costs[b]	2,604	1,054
Returns over cash costs	903	365

[a] The 1989 price is an average of the previous three years based on a weighted average of 90% No. 1 and 10% No. 2 Bartlett pears.

[b] Cash costs include total variable costs plus interest on the debt portion of investment in tractors and machines of $116/ha ($47/ac.) and other overhead costs.

Table 34.--Bartlett Pears for Processing: Operation Costs, Ontario, 1989

Operation	Times over	Labour		Labour, tractor and machine costs	
		per ha.	per ac.	per ha.	per ac.
		- hours -		- dollars -	
Pruning and brush removal	1	76.6	31.0	767.84	310.74
Fertilizing	1	2.47	1.0	36.47	14.76
Cultivation	4	4.94	2.0	83.67	33.86
Mowing	2	2.47	1.0	72.62	29.39
Weed spraying	1	2.47	1.0	52.95	21.43
Spray pesticides	6	4.94	2.0	173.22	70.10
Manure spreading	1	3.71	1.5	107.31	43.43
Sow cover crop	1	2.47	1.0	31.53	12.76
General maintenance	[a]	2.47	1.0	40.18	16.26
Distribute and collect containers	[a]	19.8	8.0	296.98	120.19
Picking	[a]	98.8	40.0	438.58	177.49
Sort and grade	[a]	29.7	12.0	219.87	88.98
Marketing/delivery	[a]	9.88	4.0	300.77	121.72

[a] Operation performed as required.

Table 35.--Strawberry "Preplant Year" Costs for Commercial Harvest and Pick-Your-Own: Estimated Cost of Production, Ontario, 1989

	Cost	
	per hectare	per acre
	- dollars -	
VARIABLE COSTS		
Fertilizer:		
10-20-20 - 200 kg/ha	54	22
Herbicides	69	28
Green manure seed	17	7
Fumigant	455	184
Tractor and machine costs:		
Repairs and maintenance	27	11
Fuel	20	8
Custom application, fumigant	37	15
Interest on operating capital	143	58
TOTAL VARIABLE COSTS	**822**	**333**
FIXED COSTS		
Operator labour, 11.1 hours/ha	89	36
Tractor and machine costs:		
Depreciation	69	28
Interest on investment	44	18
Insurance and storage	15	6
Interest on land, $4,450/ha @ 6.8% per annum	301	122
TOTAL FIXED COSTS	**518**	**210**
TOTAL "PREPLANT YEAR" COSTS	**1,340**	**543**

Table 36.--Strawberry "Preplant Year" Costs for Commercial Harvest and Pick-Your-Own: Operation Costs, Ontario, 1989

Operation	Times over	Labour		Labour, tractor and machine costs	
		per ha.	per ac.	per ha.	per ac.
		- hours -		- dollars -	
Plowing	2	4.94	2.0	122.80	49.70
Discing	1	1.24	.5	25.97	10.51
Seed green manure	1	1.24	.5	29.18	11.81
Fertilizing	1	1.24	.5	29.18	11.81
Weed spraying	1	2.47	1.0	58.14	23.53

Table 37.--Strawberry "Planting Year" Costs for Commercial Harvest and Pick-Your-Own: Estimated Cost of Production, Ontario, 1989

	Cost	
	per hectare	per acre
	- dollars -	
VARIABLE COSTS		
Hired labour, 168 hours/ha	1,008	408
Fertilizer:		
Ammonium nitrate 80 kg/ha	20	8
10-20-20 400 kg/ha	109	44
Plant starter, 8 kg/ha	5	2
Insecticides	54	22
Fungicides	42	17
Herbicides	158	64
Manure, 45 tonne/ha	494	200
Plants, 12,355/ha	618	250
Straw, 7.4 tonne/ha	534	216
Tractor and machine costs:		
Repairs and maintenance	124	50
Fuel	91	37
Interest on operating capital	457	185
TOTAL VARIABLE COSTS	**3,714**	**1,503**
FIXED COSTS		
Operator labour, 38.3 hours/ha	306	124
Tractor and machine costs:		
Depreciation	381	154
Interest on investment	259	105
Insurance and storage	79	32
Interest on land, $4,450/ha @ 6.8% per annum	301	122
Other overhead costs	247	100
TOTAL FIXED COSTS	**1,573**	**637**
TOTAL "PLANTING YEAR" COSTS	**5,287**	**2,140**

Table 38.--Strawberry "Planting Year" Costs for Commercial Harvest and Pick-Your-Own: Operation Costs, Ontario, 1989

Operation	Times over	Labour		Labour, tractor and machine costs	
		per ha.	per ac.	per ha.	per ac.
		- hours -		- dollars -	
Spreading manure	1	4.94	2.0	198.37	80.28
Plowing	1	2.47	1.0	61.40	24.85
Discing and harrowing	1	1.24	.5	28.10	11.37
Planting	1	49.4	20.0	581.67	235.40
Fertilizing	2	3.71	1.5	80.60	32.62
Hand weed, training etcetera	1	104	42.0	622.69	252.00
Weed spraying	2	4.94	2.0	116.29	47.06
Spray Pesticide	3	7.41	3.0	163.68	66.24
Cultivating	3	7.41	3.0	140.18	56.73
Mulching	1	21.0	8.5	258.30	104.53

Table 39.--Strawberry Renovation Costs for Commercial Harvest and Pick-Your-Own: Estimated Cost of Production, Ontario, 1989

	Cost	
	per hectare	per acre
	- dollars -	
VARIABLE COSTS		
Hired labour, 64.2 hours/ha	385	156
Fertilizer:		
Ammonium nitrate 100 kg/ha	22	9
10-20-20 - 500 kg/ha	136	55
Herbicides	62	25
Straw, 7.4 tonne/ha	534	216
Tractor and machine costs:		
Repairs and maintenance	64	26
Fuel	44	18
Interest on operating capital	146	59
TOTAL VARIABLE COSTS	**1,393**	**564**
FIXED COSTS		
Operator labour, 12.4 hours/ha	99	40
Tractor and machine costs:		
Depreciation	163	66
Interest on investment	109	44
Insurance and storage	35	14
TOTAL FIXED COSTS	**406**	**164**
TOTAL RENOVATION COSTS	**1,799**	**728**

Table 40.--Strawberry Renovation Costs for Commercial Harvest and Pick-Your-Own: Operation Costs, Ontario, 1989

Operation	Times over	Labour		Labour, tractor and machine costs	
		per ha.	per ac.	per ha.	per ac.
		- hours -		- dollars -	
Mowing	1	2.47	1.0	77.81	31.49
Rotovating	1	4.94	2.0	105.86	42.84
Fertilizing	2	2.47	1.0	58.34	23.61
Weed spraying	2	4.94	2.0	116.29	47.06
Cultivating	4	4.94	2.0	93.45	37.82
Hand hoeing	1	37.1	15.0	224.42	90.82
Mulching	1	19.8	8.0	222.39	90.00

Table 41.--Strawberry Preharvest and Harvest Costs for Commercial Harvest: Estimated Cost of Production, Ontario, 1989

	Cost	
	per hectare	per acre
	- dollars -	
VARIABLE COSTS		
Hired labour:		
Preharvest 29.7 hours/ha	178	72
Harvest 1,105 hours/ha	5,140	2,080
Insecticides	161	65
Fungicides	259	105
Containers, 14,827 quarts/ha	2,954	1,196
Tractor and machine costs:		
Repairs and maintenance	119	48
Fuel	101	41
Comfort station rental	62	25
Interest on operating capital	104	42
TOTAL VARIABLE COSTS	**9,078**	**3,674**
FIXED COSTS		
Operator labour:		
Preharvest 14.8 hours/ha	119	48
Harvest 44.5 hours/ha	356	144
Management allowance, 5% of gross income	927	375
Tractor and machine costs:		
Depreciation	289	117
Interest on investment	188	76
Insurance and storage	59	24
Interest on land, $4,450/ha @ 6.8% per annum	301	122
Other overhead	297	120
TOTAL FIXED COSTS	**2,536**	**1,026**
TOTAL PREHARVEST AND HARVEST COSTS	**11,614**	**4,700**
GROSS MARGIN ANALYSIS		
(Based on assumed yields of 8,407 kg/ha or 6,000 quarts/acre and assumed prices of $2.20/kg or $1.25/quart)		
Gross income	18,533	7,500
Variable costs:		
Establishment (1/4 of cost)[a]	1,134	459
Preharvest and harvest	9,078	3,674
Renovation (3/4 of cost)[a]	1,045	423
TOTAL	**11,257**	**4,556**
Gross Margin	7,276	2,944
CASH ANALYSIS		
Gross income	18,533	7,500
Cash costs:[b]		
Establishment (1/4 of cost)[a]	1,169	473
Preharvest and harvest	9,457	3,827
Renovation (3/4 of cost)[a]	1,080	437
TOTAL	**11,706**	**4,737**
Returns over cash costs	6,827	2,763

[a] The costs shown in this table are based on a system in which there are four harvesting years following the establishment year. Hence, establishment costs are spread over four production years. On the average, a field will be renovated three times during the four-year cycle before the field is taken out of production.

[b] Cash costs include total variable costs plus interest on the debt portion of investment in tractors and machines of $151/ha ($61/acre) and other overhead costs.

Table 42.--Strawberry Preharvest and Harvest Costs for Commercial Harvest: Operation Costs, Ontario, 1989

Operation	Times over	Labour		Labour, tractor and machine costs	
		per ha.	per ac.	per ha.	per ac.
		- hours -		- dollars -	
Preharvest					
Removing mulch	1	7.41	3.0	85.77	34.71
Set-up and irrigating	[a]	9.88	4.0	431.61	174.67
Spray pesticides	6	14.8	6.0	327.36	132.48
Hand weeding	1	12.36	5.0	74.13	30.00
Harvest					
Harvesting	[a]	971	393.0	4,659.32	1,885.60
Assemble masters	[a]	79.1	32.0	375.59	152.00
Miscellaneous work	[a]	98.8	40.0	593.04	240.00

[a] Operation performed as required.

Table 43.--Strawberry Preharvest and Harvest Costs for Pick-Your-Own: Estimated Cost of Production, Ontario, 1989

	Cost	
	per hectare	per acre
	- dollars -	
VARIABLE COSTS		
Hired labour:		
Preharvest 29.6 hours/ha	178	72
Harvest 178 hours/ha	1,068	432
Insecticides	161	65
Fungicides	259	105
Tractor and machine costs:		
Repairs and maintenance	119	48
Fuel	101	41
Advertising	415	168
Comfort station rental	62	25
Parking area maintenance	148	60
Special equipment use	297	120
Interest on operating capital	32	13
TOTAL VARIABLE COSTS	**2,840**	**1,149**
FIXED COSTS		
Operator labour:		
Preharvest 14.8 hours/ha	119	48
Harvest 44.5 hours/ha	356	144
Management allowance, 5% of gross income	519	210
Tractor and machine costs:		
Depreciation	289	117
Interest on investment	188	76
Insurance and storage	59	24
Interest on land, $4,450/ha @ 6.8% per annum	301	122
Other overhead	297	120
TOTAL FIXED COSTS	**2,128**	**861**
TOTAL PREHARVEST AND HARVEST COSTS	**4,968**	**2,010**
GROSS MARGIN ANALYSIS		
(Based on assumed yields of 8,407 kg/ha or 6,000 quarts/acre and assumed prices of $1.24/kg or 70 cents/quart)		
Gross income	10,378	4,200
Variable costs:		
Establishment (1/4 of cost)[a]	1,134	459
Preharvest and harvest	2,840	1,149
Renovation (3/4 of cost)[a]	1,045	423
TOTAL	**5,019**	**2,031**
Gross Margin	5,359	2,169
CASH ANALYSIS		
Gross income	10,378	4,200
Cash costs:[b]		
Establishment (1/4 of cost)[a]	1,169	473
Preharvest and harvest	3,217	1,302
Renovation (3/4 of cost)[a]	1,080	437
TOTAL	**5,466**	**2,212**
Returns over cash costs	4,912	1,988

[a] The costs shown in this table are based on a system in which there are four harvesting years following the establishment year. Hence, establishment costs are spread over four production years. On the average, a field will be renovated three times during the four-year cycle before the field is taken out of production.

[b] Cash costs include total variable costs plus interest on the debt portion of investment in tractors and machines of $151/ha ($61/acre) and other overhead costs.

Table 44.--Strawberry Preharvest and Harvest Costs for Pick-Your-Own: Operation Costs, Ontario, 1989

Operation	Times over	Labour		Labour, tractor and machine costs	
		per ha.	per ac.	per ha.	per ac.
		- hours -		- dollars -	
Preharvest					
Removing mulch	1	7.41	3.0	85.77	34.71
Set-up and irrigating	[a]	9.88	4.0	431.61	174.67
Spray pesticides	6	14.8	6.0	327.36	132.48
Hand weeding	1	12.4	5.0	74.13	30.00
Harvest					
Harvest supervision	[a]	44.5	18.0	489.51	198.10
Harvest assistance	[a]	178	72.0	1,067.47	432.00

[a] Operation performed as required.

Table 45.--Raspberry "Preplant Year" Costs for Commercial Harvest and Pick-Your-Own: Estimated Cost of Production, Ontario, 1989

	Cost per hectare	Cost per acre
	- dollars -	
VARIABLE COSTS		
Fertilizer:		
8-32-16 150 kg/ha	44	18
Ammonium nitrate 100 kg/ha	22	9
Herbicides	252	102
Green manure seed	15	6
Tractor and machine costs:		
Repairs and maintenance	30	12
Fuel	22	9
Interest on operating capital	136	55
TOTAL VARIABLE COSTS	**521**	**211**
FIXED COSTS		
Operator labour, 12.4 hours/ha	99	40
Tractor and machine costs:		
Depreciation	77	31
Interest on investment	49	20
Insurance and storage	15	6
Interest on land, $4,450/ha @ 6.8% per annum	301	122
TOTAL FIXED COSTS	**541**	**219**
TOTAL "PREPLANT YEAR" COSTS	**1,062**	**430**

Table 46.--Raspberry "Preplant Year" Costs for Commercial Harvest and Pick-Your-Own: Operation Costs, Ontario, 1989

Operation	Times over	Labour per ha.	Labour per ac.	Labour, tractor and machine costs per ha.	Labour, tractor and machine costs per ac.
		- hours -		- dollars -	
Plowing	2	4.94	2.0	122.80	49.70
Discing	1	1.24	.5	25.97	10.51
Seed green manure	1	2.47	1.0	58.34	23.61
Fertilizing	1	1.24	.5	29.18	11.81
Weed spraying	1	2.47	1.0	58.14	23.53

Table 47.--Raspberry "Planting Year" Costs for Commercial Harvest and Pick-Your-Own: Estimated Cost of Production, Ont., 1989

	Cost	
	per hectare	per acre
	- dollars -	
VARIABLE COSTS		
Hired labour, 89 hours/ha	460	186
Fertilizer:		
15-15-15 445 kg/ha	104	42
10-52-10 14 kg/ha	10	4
Insecticides	44	18
Fungicides	20	8
Plants, 4,942/ha	1,384	560
Cover crop seed	67	27
Trickle irrigation	2,076	840
Trellis posts	193	78
Tractor and machine costs:		
Repairs and maintenance	104	42
Fuel	84	34
Interest on operating capital	954	386
TOTAL VARIABLE COSTS	**5,500**	**2,225**
FIXED COSTS		
Operator labour, 55.6 hours/ha	445	180
Tractor and machine costs:		
Depreciation	380	154
Interest on investment	269	109
Insurance and storage	79	32
Interest on land, $4,450/ha @ 6.8% per annum	301	122
Other overhead costs	247	100
TOTAL FIXED COSTS	**1,721**	**697**
TOTAL "PLANTING YEAR" COSTS	**7,221**	**2,922**

Table 48.--Raspberry "Planting Year" Costs for Commercial Harvest and Pick-Your-Own: Operation Costs, Ontario, 1989

Operation	Times over	Labour		Labour, tractor and machine costs	
		per ha.	per ac.	per ha.	per ac.
		- hours -		- dollars -	
Discing	2	2.47	1.0	51.97	21.03
Harrowing	1	1.24	.5	24.81	10.04
Fertilizing	1	1.24	.5	29.18	11.81
Lay out field	1	7.41	3.0	59.30	24.00
Planting	1	39.5	16.0	465.34	188.32
Irrigation	[a]	4.94	2.0	51.89	21.00
Cultivating	4	12.4	5.0	250.68	101.45
Hoe,weed, and blossom removal	[a]	49.4	20.0	234.74	95.00
Seed cover crop	1	1.24	.5	29.18	11.81
Spray pesticides	2	4.94	2.0	109.12	44.16
Install posts	[a]	19.8	8.0	508.73	205.88

[a] Operation performed as required.

Table 49.--Raspberry "Growth Year" Costs for Commercial Harvest and Pick-Your-Own: Estimated Cost of Production, Ont., 1989

	Cost	
	per hectare	per acre
	- dollars -	
VARIABLE COSTS		
Hired labour, 121 hours/ha	633	256
Fertilizer, 17-17-17 340 kg/ha	89	36
Insecticides	133	54
Fungicides	499	202
Herbicides	5	2
Trellis wire	630	255
Tractor and machine costs:		
Repairs and maintenance	86	35
Fuel	64	26
Interest on operating capital	151	61
TOTAL VARIABLE COSTS	**2,290**	**927**
FIXED COSTS		
Operator labour, 29.7 hours/ha	237	96
Tractor and machine costs:		
Depreciation	175	71
Interest on investment	111	45
Insurance and storage	35	14
Interest on land, $4,450/ha @ 6.8% per annum	301	122
Other overhead costs	247	100
TOTAL FIXED COSTS	**1,106**	**448**
TOTAL "GROWTH YEAR" COSTS	**3,396**	**1,375**

Table 50.--Raspberry "Growth Year" Costs for Commercial Harvest and Pick-Your-Own: Operation Costs, Ontario, 1989

Operation	Times over	Labour		Labour, tractor and machine costs	
		per ha.	per ac.	per ha.	per ac.
		- hours -		- dollars -	
Fertilizing	1	1.24	.5	29.18	11.81
Mowing	3	3.71	1.5	124.12	50.23
Hand weeding	[a]	12.4	5.0	58.69	23.75
Irrigating	[a]	7.41	3.0	77.84	31.50
Weed spraying	1	2.47	1.0	58.14	23.53
Spray pesticides	6	14.8	6.0	327.36	132.48
Thinning canes	[a]	74.1	30.0	367.56	148.75
Stretch wire	[a]	34.6	14.0	287.77	116.46

[a] Operation performed as required.

Table 51.--Raspberry Preharvest and Harvest Costs for Commercial Harvest: Estimated Cost of Production, Ontario, 1989

	Cost	
	per hectare	per acre
	- dollars -	
VARIABLE COSTS		
Hired labour:		
Preharvest 123.6 hours/ha	680	275
Harvest 858.7 hours/ha	4,122	1,668
Fertilizer, 17-17-17 340 kg/ha	89	36
Insecticides	133	54
Fungicides	499	202
Herbicides	203	82
Miticides	168	68
Containers, 6,672 pints/ha	739	299
Trellis materials	74	30
Tractor and machine costs:		
Repairs and maintenance	168	68
Fuel	148	60
Comfort station rental	62	25
Interest on operating capital	247	100
TOTAL VARIABLE COSTS	**7,332**	**2,967**
FIXED COSTS		
Operator labour:		
Preharvest 87.7 hours/ha	702	284
Harvest 74.1 hours/ha	593	240
Management allowance, 5% of gross income	633	256
Tractor and machine costs:		
Depreciation	343	139
Interest on investment	208	84
Insurance and storage	67	27
Interest on land, $4,450/ha @ 6.8% per annum	301	122
Other overhead	371	150
TOTAL FIXED COSTS	**3,218**	**1,302**
TOTAL PREHARVEST AND HARVEST COSTS	**10,550**	**4,269**
GROSS MARGIN ANALYSIS		
(Based on assumed yields of 6,672 pints/ha or 2,700 pints/acre and assumed price of $1.90/pint)		
Gross income	12,676	5,130
Variable costs:		
Amortized establishment costs[a]	2,834	1,147
Preharvest and harvest	7,332	2,967
TOTAL	**10,166**	**4,114**
Gross Margin	2,510	1,016
CASH ANALYSIS		
Gross income	12,676	5,130
Cash costs:		
Amortized establishment costs[a]	2,834	1,147
Preharvest and harvest[b]	7,792	3,153
TOTAL	**10,626**	**4,300**
Returns over cash costs	2,050	830

[a] Amortized establishment costs include preplant year costs, planting year costs, and growth year costs amortized over five production years at a rate of 6.8 percent.

[b] Cash costs for preharvest and harvest include total variable costs plus interest on the debt portion of investment in tractors and machines of $89/ha ($36/acre) and other overhead costs.

Table 52.--Raspberry Preharvest and Harvest Costs for Commercial Harvest: Operation Costs, Ontario, 1989

Operation	Times over	Labour		Labour, tractor and machine costs	
		per ha.	per ac.	per ha.	per ac.
		- hours -		- dollars -	
Preharvest					
Topping,pruning and thinning	[a]	124	50.0	728.94	295.00
Removing brush	[a]	4.94	2.0	98.99	40.06
Fertilizing	1	2.47	1.0	51.42	20.81
Mowing	3	3.71	1.5	124.12	50.23
Weed spraying	2	4.94	2.0	109.56	44.34
Irrigating	a	12.4	5.0	154.44	62.50
Spray pesticides	7	17.3	7.0	381.92	154.56
Removing canes	a	24.7	10.0	148.26	60.00
Trellis maintenance	a	17.3	7.0	218.58	88.46
Harvest					
Supervision	[a]	74.1	30.0	860.40	348.20
Picking	[a]	834	337.5	4,003.02	1,620.00
Assemble masters	[a]	24.7	10.0	117.37	47.50

[a] Operation performed as required.

Table 53.--Raspberry Preharvest and Harvest Costs for Pick-Your-Own: Estimated Cost of Production, Ontario, 1989

	Cost per hectare	Cost per acre
	- dollars -	
VARIABLE COSTS		
Hired labour:		
Preharvest 123.6 hours/ha	680	275
Harvest 74.1 hours/ha	415	168
Fertilizer, 17-17-17 340 kg/ha	89	36
Insecticides	133	54
Fungicides	499	202
Herbicides	203	82
Miticides	168	68
Trellis materials	74	30
Tractor and machine costs:		
Repairs and maintenance	168	68
Fuel	148	60
Comfort station rental	62	25
Checkout equipment rental	297	120
Parking area maintenance	148	60
Advertising	415	168
Interest on operating capital	124	50
TOTAL VARIABLE COSTS	**3,623**	**1,466**
FIXED COSTS		
Operator labour:		
Preharvest 87.7 hours/ha	702	284
Harvest 49.4 hours/ha	395	160
Management allowance, 5% of gross income	418	169
Tractor and machine costs:		
Depreciation	343	139
Interest on investment	208	84
Insurance and storage	67	27
Interest on land, $4,450/ha @ 6.8% per annum	301	122
Other overhead	371	150
TOTAL FIXED COSTS	**2,805**	**1,135**
TOTAL PREHARVEST AND HARVEST COSTS	**6,428**	**2,601**
GROSS MARGIN ANALYSIS		
(Based on assumed yields of 6,672 pints/ha or 2,700 pints/acre and assumed price of $1.25/pint)		
Gross income	8,340	3,375
Variable costs:		
Amortized establishment costs[a]	2,834	1,147
Preharvest and harvest	3,623	1,466
TOTAL	**6,457**	**2,613**
Gross Margin	1,883	762
CASH ANALYSIS		
Gross income	8,340	3,375
Cash costs:		
Amortized establishment costs[a]	2,834	1,147
Preharvest and harvest[b]	4,083	1,652
TOTAL	**6,917**	**2,799**
Returns over cash costs	1,423	576

[a] Amortized establishment costs include preplant year costs, planting year costs, and growth year costs amortized over five production years at a rate of 6.8 percent.

[b] Cash costs for preharvest and harvest include total variable costs plus interest on the debt portion of investment in tractors and machines of $89/ha ($36/acre) and other overhead costs.

Table 54.--Raspberry Preharvest and Harvest Costs for Pick-Your-Own: Operation Costs, Ontario, 1989

Operation	Times over	Labour		Labour, tractor and machine costs	
		per ha.	per ac.	per ha.	per ac.
		- hours -		- dollars -	
Preharvest					
Topping,pruning and thinning	[a]	124	50.0	728.94	295.00
Removing brush	[a]	4.94	2.0	98.99	40.06
Fertilizing	1	2.47	1.0	51.42	20.81
Mowing	3	3.71	1.5	124.12	50.23
Weed spraying	2	4.94	2.0	109.56	44.34
Irrigating	[a]	12.4	5.0	154.44	62.50
Spray pesticides	7	17.3	7.0	381.92	154.56
Removing canes	[a]	24.7	10.0	148.26	60.00
Trellis maintenance	[a]	17.3	7.0	218.58	88.46
Harvest					
Supervision	[a]	49.4	20.0	662.72	268.20
Check out	[a]	74.1	30.0	413.89	167.50

[a] Operation performed as required.

Appendix Table 1.-- Marketed Fruit Production, Ontario, 1984-1988

Crop	Unit	1984	1985	1986	1987	1988[a]
Imperial Units				- '000 -		
Apples	lb	317,600	402,777	347,359	377,203	315,517
Blueberries	qt	n/a	n/a	924	921	624
Cantaloupes	lb	2,139	1,818	3,790	4,075	4,167
Cherries, sour	lb	15,285	13,696	8,460	13,600	11,300
Cherries, sweet	lb	5,129	3,464	3,048	2,750	2,475
Grapes	lb	180,074	138,672	170,285	156,266	150,269
Peaches	lb	45,472	70,014	56,898	71,800	79,000
Pears	lb	27,125	28,101	34,288	30,516	25,939
Plums & prunes	lb	6,658	7,204	10,876	7,100	5,254
Raspberries	qt	833	1,094	1,495	1,791	1,511
Strawberries	qt	16,492	22,670	20,995	19,318	14,108
Metric Units				- tonnes -		
Apples		144,061	182,698	157,561	171,098	143,118
Blueberries		n/a	n/a	524	522	354
Cantaloupes		970	825	1,719	1,848	1,890
Cherries, sour		6,933	6,212	3,837	6,169	1,123
Cherries, sweet		2,326	1,571	1,383	1,247	5,126
Grapes		81,680	62,901	77,241	70,882	68,162
Peaches		20,626	31,758	25,809	32,568	35,834
Pears		12,303	12,745	15,553	13,842	11,766
Plums & prunes		3,020	3,268	4,933	3,221	2,383
Raspberries		472	620	848	1,015	857
Strawberries		9,351	12,854	11,904	10,953	7,999

[a] Preliminary, subject to revision.

Source: Seasonal Fruit and Vegetable Report, Annual Summary, Economics and Policy Coordination Branch, Ontario Ministry of Agriculture and Food.

Appendix Table 2.--Average Prices Received for Fruit, Ontario, 1984-1988

Crop		1984	1985	1986	1987	1988
				- cents/lb -		
Apples	- fresh	16.6	15.1	20.8	20.0	15.4
	- proc.	7.8	5.3	6.9	5.6	10.1
Blueberries	- fresh	n/a	n/a	135.2	160.2	174.6
Cantaloupes	- fresh	31.6	34.0	26.9	24.5	23.6
Cherries, sour	- fresh	43.1	41.5	45.3	26.1	36.8
	- proc.	34.5	38.3	42.0	18.3	33.5
Cherries, sweet	- fresh	43.8	77.4	71.6	69.6	97.6
	- proc.	32.3	32.8	36.1	37.2	41.4
Grapes	- fresh	23.0	26.9	30.0	28.9	30.0
	- proc.	18.7	18.8	17.9	18.9	18.3
Peaches	- fresh	30.0	26.0	29.1	26.6	25.5
	- proc.	22.3	23.2	23.3	23.3	23.5
Pears	- fresh	24.4	27.7	24.7	25.1	28.4
	- proc.	15.3	17.0	17.2	17.8	17.2
Plums/prunes	- fresh	33.4	57.8	27.8	23.8	32.3
	- proc.	16.2	17.5	16.3	15.4	17.5
Raspberries	- fresh	177.8	166.3	163.8	170.8	195.1
Strawberries	- fresh	53.5	55.7	61.4	61.9	73.7
				- cents/kg -		
Apples	- fresh	36.6	33.3	45.9	44.1	34.0
	- proc.	17.2	11.7	15.2	12.3	22.3
Blueberries	- fresh	n/a	n/a	298.1	353.2	384.9
Cantaloupes	- fresh	69.7	75.0	59.3	54.0	52.0
Cherries,sour	- fresh	95.0	91.5	99.9	57.5	81.1
	- proc.	76.1	84.4	92.6	40.3	73.9
Cherries, sweet	- fresh	96.6	170.6	157.8	153.4	215.2
	- proc.	71.2	72.3	79.6	82.0	91.3
Grapes	- fresh	50.7	59.3	66.1	63.7	66.1
	- proc.	41.2	41.4	39.5	41.7	40.3
Peaches	- fresh	66.1	57.3	64.2	58.6	56.2
	- proc.	49.2	51.1	51.4	51.4	51.8
Pears	- fresh	53.8	61.1	54.5	55.3	62.6
	- proc.	33.7	37.5	37.9	39.2	37.9
Plums/prunes	- fresh	73.6	127.4	61.3	52.5	71.2
	- proc.	35.7	38.6	35.9	34.0	38.6
Raspberries	- fresh	392.0	366.6	361.1	376.5	430.1
Strawberries	- fresh	117.9	122.8	135.4	136.5	162.5

Source: Seasonal Fruit and Vegetable Report, Economics and Policy Coordination Branch, Ontario Ministry of Agriculture and Food.

Appendix Table 3.--Minimum Prices Paid for Ontario Tender Fruit for Processing, 1985-1989

Crop	1985	1986	1987	1988	1989
			- $/ton -		
Sweet cherries,					
canning	1,161.50	1,201.50	1,201.50	1,281.50	1,281.50
maraschino	601.50	641.50	721.50	721.50	721.50
Sour cherries,					
97-100 grade	814.10	923.10	399.90	705.10	645.15
Plums	303.50	303.50	311.50	316.50	316.50
Prunes	348.50	348.50	357.50	362.50	362.50
Damsons	372.50	372.50	381.50	386.50	386.50
Bartlett pears,					
No. 1	359.50	359.50	372.50	377.50	377.50
No. 2	212.50	212.50	220.50	225.50	225.50
Other pears,#1	319.50	319.50	327.50	332.50	332.50
Peaches,					
Freestone	408.50	408.50	408.50	413.50	413.50
Clingstone	465.50	465.50	465.50	470.50	470.50

Source: Ontario Tender Fruit Producers' Marketing Board

Appendix Table 4.--Minimum Prices Paid for Ontario Grapes for Processing, 1984-1988

	1984	1985	1986	1987	1988
			- $/ton -		
Class 1. (Concord, Fredonia, Beta, Clinton, Lincoln, Lomanto, Patricia, President, VanBuren, & Westfield)	295	271	271	273	270
Class 1A. (Veeport)	295	271	271	205	203
Class 2. (Elvira, Buffalo, Missouri Riesling, Ontario, Seneca, V35122, & V35123)	316	310	318	300	181
Class 3. (Niagara)	275	265	263	265	262
Class 3A. (Agawam, Brighton, Vergennes, Diana, Caco)	285	270	270	275	181
Class 4. (Catawba & Ventura)	361	346	355	320	254
Class 5. (Blue French Hybrids, Baco Noir, Villard Noir, Chancellor, Cascade, Seibel 13053, & Chambourcin)	428	422	430	443	340
Class 5A. (deChaunac)	347	340	335	318	227
Class 5B. (Chelois)	435	427	440	453	340
Class 5C. (Rosette)	428	375	360	324	227
Class 6. (N.Y. Muscat, Canada Muscat)	600	564	565	582	301
Class 6A. (Marechal Foch & Leon Millot)	430	422	415	395	268
Class 6B. (Alden, Veeblanc, Vincent)	600	461	462	462	291
Class 6C. (Delaware, Dutchess)	600	564	565	525	181
Class 7. (White French Hybrids, Seibel 8229, 10868, 13047, Aurore, Verdelet, Seyve-Villard 172 & 23512, Seyval Blanc, Siegfried Rebe, & Vidal 256)	615	585	600	600	346
Class 8. (LeCommandant)	439	420	405	365	227
Class 8A. (Couderc 29935, Colobel, Florental, & B.S. 2846)	598	594	610	610	457
Class 9. (J. Riesling, Bacchus, Kerner)	800	760	783	806	578
Class 9A. (Gamay, Aligote)	870	810	834	859	542
Class 9B. (Chardonnay)	870	825	850	875	1,266
Class 9C. (all other Vinifera)	925	875	910	937	832
Class 10. (experimental varieties)	549	563	571	570	346

Source: Ontario Grape Growers' Marketing Board.

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